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RENAL TUBERCULOSIS *

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MINNEAPOLIS

About ten years ago I became interested in the study of renal tuberculosis because it seemed to me that in some way we should be able to arrest this condition before the kidney is destroyed and before the bladder becomes so impaired that it causes chronic invalidism. The hope that I might learn something about the early lesion of renal tuberculosis encouraged me to begin this clinical and pathologic study in the Hennepin County Sanatorium at Glen Lake, Minn.

Among the patients in the sanatorium I observed many who had proved urinary tuberculosis but in whom symptoms and clinical observations were either absent or not at all typical of this disease as it occurs in the practice of any urologist. This apparent difference in types of cases aroused the interest of my colleagues and myself and caused us to continue our clinical investigation.

When I studied the patient's condition during the early stages of his renal infection with tuberculosis, I learned that this disease is not primarily a local condition in the kidney but merely a part of a generalized disease that has localized in the kidney. On discovering the general character of the condition, I immediately recognized the necessity of close cooperation with the physicians who were studying tuberculosis in all its forms. This cooperation was easily obtained at Glen Lake Sanatorium, and every member of the staff of physicians and technicians assisted in the study. Dr. Thomas J. Kinsella has directed the clinical work and assisted at the operating table at the sanatorium and has had the association of Drs. C. C. Van Winkle and L. E. Williams, pathologists. Dr. E. W. Exley, my associate, has made many of the urologic examinations. With this group of co-workers we began our clinical and pathologic study. Glen Lake Sanatorium is ideally located for the treatment of tuberculosis and is controlled and equipped by Hennepin County. It has 715 beds for the use of patients from this county who are suffering from tuberculosis in any form.

SURGICAL INCIDENCE

A recent survey of the reports of many surgeons indicates that from 25 to 35 per cent of all nephrectomies are done because of renal infection with the tubercle bacillus. Forty per cent of these patients are not cured by nephrectomy but continue to have persistent bladder symptoms, the very condition for which many are seeking relief. There is no group of patients with urologic conditions who suffer more and who have a more gloomy outlook than those who have a bladder infected with tuberculosis. When they submit to the major operation of nephrectomy they cannot be assured that they will be living two years after operation. With no other disease in the field of urology except malignant conditions is the suffering so great, and only malignant conditions exceed renal tuberculosis in mortality. A malignant condition at its beginning may be a local and a primary disease, while tuberculosis of the urinary tract is never a primary disease, and during the early stages is never a local one but is secondary to lesions of tuberculosis elsewhere in the body.

Much progress has been made during recent years in the treatment and prevention of pulmonary tuberculosis. Much money has been spent and many lay and professional workers have devoted their time and energy to the control of the "white plague." The efforts of this group have met with increasing success. Their work, however, is focused on methods of prevention and, when necessary, on arrest of the pulmonary lesions. In accomplishing this, they control other lesions because the pulmonary lesion is the most common and is generally the primary focus for lesions found in the kidney and elsewhere. Except as these general control measures have affected the incidence of genito-urinary tuberculosis, little attention has been given to the study and control of the early lesion in the urinary tract. Urologists have not studied the pathology of the early lesion of renal tuberculosis because they have usually observed only the later, or destructive, lesion. The early lesion of tuberculosis in the lung has been studied by the clinician, the pathologist and the roentgenologist and they are now able to recognize it before destruction occurs. Their slogan may well be, "early discovery, early cure." With renal tuberculosis, however, this has not been the case. Urologists have not searched for the early lesion because they have not had a clean-cut conception of the pathology of this condition from its beginning. Dr. E. M. Medlar's excellent work, both experimentally with animals and with autopsy specimens of human kidneys, should direct the attention of all urologists to a more careful study of the pathology of renal tuberculosis, especially of the early lesion.

It is necessary for this study that the patient be under observation in a tuberculosis sanatorium. It is during the active stage of the original pulmonary or other lesion of tuberculosis that the kidney becomes infected and the early lesions develop.

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* Chairman's address, read before the Section on Urology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 11, 1929.

PATHOLOGY OF RENAL TUBERCULOSIS

Medlar's excellent work, wherein he was able to study thousands of serial microscopic sections of human kidneys infected with tuberculosis, completely explains the microscopic pathologic changes of this condition from its beginning. We have checked his work from many different angles and agree with him that "nondestructive lesions of tuberculosis may heal and tubercle bacilli do not pass through a kidney that does not contain a lesion of tuberculosis." From a clinical standpoint, the early lesions in the kidney before destruction has occurred can now be recognized.

NEPHRITIS AND NEPHROSIS

In association with Dr. H. O. Altnow, one of my medical colleagues, who is making a study of nephritis and nephrosis as it occurs among tuberculous patients, we have learned to recognize the following pathologic types:

1. *Toxic Albuminuria.*—The urine contains albumin, no casts, and few or no pus cells, and if ulceration occurs it may contain tubercle organisms.

2. *Subacute and Chronic Nephritis.*—Albumin and casts appear in the urine. Tubercle bacilli may be present and pus cells frequently are present.

3. *Hemorrhagic Nephritis.*—This is characterized by blood cells in the urine, light albuminuria and a few casts.

4. *Amyloid Degeneration.*—This is truly a glomerulonephrosis, possibly the result of inflammatory reaction in the kidney caused by the tubercle bacillus directly, or by toxemia caused by tuberculous infection elsewhere. It is probably more frequently the result of the latter condition.

I believe that the toxic albuminuria which is observed among these patients is frequently produced by invasion of the renal tissue with tubercle bacilli carried through the blood stream. I believe that the capillary tuft in the glomerulus is one of the first places where the tubercle bacillus produces inflammation. Again, inflammatory areas may be found beginning around the small arterioles between the tubules. If only a few bacilli are located in either of these areas, ulceration, caseation or breaking down may not occur, and no pus or tubercle bacilli find their way into the urine. This inflammatory reaction, however, is evidenced by the appearance of albumin in the urine.

As a result of repeated reinfections of the kidney secondary to repeated bacteremias, this inflammatory condition may become more extensive, and both albumin and casts will appear in the urine. So long as ulceration into a tubule does not occur, pus cells or tubercle bacilli may not appear in the urine.

Although specific toxins of tubercle bacilli and microbes and toxins of mixed infection must be considered as etiologic factors in the production of hemorrhagic nephritis, I believe that this type of nephritis may also be caused by tubercle bacilli in the kidney.

Only in the exceptional case in these groups was Dr. Altnow able to observe the usual confirmatory symptoms, such as edema and high blood pressure, which accompany nephritis of other etiology. He is making a study of nephritis among the patients at Glen Lake Sanatorium, and reference may be made to his articles, which will appear shortly, for an analysis of nephritis as he finds it among patients who have tuberculosis.

ELIMINATORY BACILLURIA

The inflammatory lesion just described, when accompanied by ulceration into a tubule with pus and tubercle bacilli in the urine, causes most of the controversy concerning eliminatory bacilluria. Most observers admit that some inflammatory changes should occur when tubercle bacilli invade the kidney but doubt their existence because the tissue reaction may not be specific for tuberculosis if only a few microscopic sections are studied. Dr. Medlar has proved conclusively that the scars which are left after a kidney is invaded with tubercle bacilli are caused by this organism. These data can be obtained only after thousands of microscopic sections of the kidney are carefully studied. Medlar was able to recognize microscopic tuberculous lesions in the kidney when no organisms were found in the urine. When bacilli are found in the urine I cannot see how any one can doubt the existence of a lesion of tuberculosis if the pathologic changes are studied microscopically.

I believe that bacilluria may occur without the production of a macroscopic destructive lesion. I am sure from our clinical studies, however, and from our pathologic work and that of Dr. Medlar, that, when tubercle bacilli are found in the urine, some lesion in the kidney produced by the tubercle bacillus has progressed far enough to cause ulceration. In my opinion, the controversy over eliminatory bacilluria narrows down to accepting the possibility that tiny tuberculous lesions in the kidney may ulcerate into a tubule but may not caseate or produce destruction that is macroscopic. Since it is recognized that the early inflammatory changes which occur after the kidney is invaded with tubercle bacilli are in reality beginning lesions of tuberculosis, we must believe that tubercle bacilli cannot pass through the kidney without producing a lesion.

BILATERAL INFECTION

Since practically all tuberculous infections of the kidney occur through the hematogenous route, I believe that except in very rare instances both kidneys are primarily infected. This occurs following repeated bacteremias or the pouring into the blood stream of many tubercle bacilli from a suppurating gland or other focus. It is possible that if only a few tubercle bacilli are in the blood stream the majority of these may find their way into one kidney, where destruction may occur, and only a few into the second kidney, where they may be completely encapsulated and removed before they have produced more of an inflammatory reaction than would be recognized as albuminuria.

ANATOMIC LESIONS

According to Medlar, the early pathologic lesions may be classified anatomically as cortical (75 per cent), which comprise the majority of the type described here under nephritis; corticomedullary (13 per cent), and medullary (11 per cent).

Cortical lesions may ulcerate into a tubule, so that tubercle bacilli and pus may be found in the urine, but destruction or phthisis occurs infrequently. Dr. Medlar, in his microscopic study of kidneys invaded with tubercle bacilli, was able to demonstrate the different steps of tuberculous involvement, and the healing of these lesions. Since the kidney may be constantly reinfected following repeated bacteremias, lesions in different stages of infection and healing may be observed, not only in the cortex, but in the medulla as well. We

have examined Dr. Medlar's slides and believe that his observations are correct.

The cortical lesions, which are the most common, heal more frequently than the other types and leave many microscopic scars. Tubercle bacilli seem to get into the cortex more easily than into the medulla, and healing occurs here more often than elsewhere in the kidney.

Corticomedullary lesions are very destructive and may have their beginning in the arcuate arteries, but occasionally they are the result of the spread of the cortical lesion through a tubule or through the lymphatics. These lesions may heal, but not as often as the cortical type. If more than a few bacilli are present, destruction usually takes place and pus and tubercle bacilli are generally seen in the urine.

Medullary lesions are those which originate from the tiny vessels in the medulla and may be the result of an infection in one of the vessels in the pyramid. It is possible that this type of lesion may be secondary to a cortical lesion, but serial sections do not show a connection between these and the numerous lesions which are observed in the cortex. There is much destruction with this type of lesion and, because of this, the tubules are constantly filled with tubercle bacilli and pus, which find their way into the urine. This lesion, as well as the corticomedullary lesion, produces destruction early and therefore it is observed more frequently by the urologist than is the cortical lesion. It constitutes 75 per cent of the clinical types of renal tuberculosis now observed.

IMPORTANCE OF EARLY PATHOLOGIC LESIONS

If urologists are going to make any progress in their attack on tuberculosis of the kidney, they must recognize the early lesions and bend their efforts toward their arrest and healing before destruction can occur. Every urologist who studies and understands the early pathologic changes in tuberculosis of the kidney will make sure, when he examines his patient, that evidence of tuberculosis cannot be found in the supposedly good kidney and that the patient who is to be operated on has demonstrated his ability to control tuberculosis. He should not be left with a large, gaping wound which will not heal. Such a wound may cause suffering for weeks and months, because nonresistant tissue in the wound has been thoroughly reinfected with tubercle bacilli. If this patient were known to have specific resistance against the tubercle bacillus, the removal of a kidney should be followed by an uneventful convalescence with complete primary healing of the wound.

It is my opinion that many cases of early renal tuberculosis go undiscovered and heal before destruction occurs. Many patients with early renal tuberculosis are treated for pyelonephritis. In one instance, a patient was treated for pyelitis of pregnancy who had an early renal tuberculosis.

Most urologists practice early surgical removal when one of two kidneys eliminates tubercle bacilli or has a destructive lesion of renal tuberculosis, and when the other kidney does not show evidence of a destructive lesion or does not eliminate tubercle bacilli. Experience has taught that one examination may not reveal a nondestructive tuberculous infection in the supposedly good kidney. Repeated examinations are necessary. Our high percentage of bilateral lesions is the result of repeated examinations of both kidneys.

DATA OBTAINED FROM HISTORIES OF PATIENTS WITH EARLY LESIONS

Every patient admitted to the sanatorium gave a history of some extra-urinary type of tuberculosis. In our group of renal infections, we found 95 per cent with pulmonary lesions. Bone lesions were next in frequency, a few patients had peritonitis, and a very few were admitted with glandular lesions. Only an occasional patient was admitted for some genito-urinary lesion, which indicates that renal tuberculosis is always a secondary lesion (Skoda's law). In no instance was it impossible to find evidence of an active or healed lesion of tuberculosis elsewhere than in the urinary tract. A survey of the urinary history of our patients with early renal lesions was enlightening. No urinary symptoms were present in a majority of the patients with early lesions. A few had slight frequency of urination and a smaller number had night frequency. Less than 25 per cent had the severe urinary symptoms usually complained of by patients with a tuberculous bladder. Some patients developed urinary symptoms months or years after positive evidence of a renal lesion was obtained.

TECHNIC OF UROLOGIC STUDY

Frequent apparent errors in our urologic observations, later eliminated when our opinion was based on several rather than on one examination, led us to the establishment of an elaborate technic. This technic involves the preliminary study of the urine, as well as the clinical and instrumental examination of the urologic tract.

Urinalysis.—Our routine examination of the urine of every patient in the sanatorium with any lesion of tuberculosis is as follows: All patients whose urine contains persistent leukocytes, pus cells, numerous epithelial cells, or other pathologic elements, are further checked by means of "tube specimens"; that is, the patient is prepared in the same manner as for catheterization and is then asked to void directly into a sterile receptacle. This method enables us in a great number of instances, particularly in women, to avoid unnecessary catheterization. If leukocytes, red blood cells or other pathologic elements are still present in these tube specimens, catheterization is done and the patient is listed for further study, according to the following routine:

Six specimens of urine from each patient are sedimented at weekly intervals and injected into the same guinea-pig. At least two of these are twenty-four hour specimens from which a large sample, usually 200 cc., is sedimented and antiformin ized. The other four injections are made from the sediment of sterile "tube specimens" not treated by the antiformin method. The guinea-pigs, unless they die in the meantime, are killed six weeks after the last injection and their organs examined grossly and microscopically for evidence of tuberculosis. All urinals, specimen bottles and other utensils used in this study are carefully cleansed and sterilized before the specimens are collected and are used for no other purpose. This precaution is taken to prevent false positive reports because of contamination of specimens. All patients with symptoms, positive observations or persistent inflammatory elements in their catheterized specimens of urine are listed for urologic study, and ureteral specimens are collected for microscopic study, Ziehl-Nielsen stain and guinea-pig inoculations.

When this technic is followed we believe that, if more than a few tubercle bacilli are present in the urine, the animal test will be positive. It is possible that we miss the diagnosis when a kidney throws off bacilli only occasionally and we are unfortunate enough to collect our specimens during a quiescent interval. We have examined several hundred specimens of urine by this method and find that we seldom miss finding tubercle bacilli.

Animal Inoculation.—We have injected an average of 300 animals a year by the intraperitoneal technic. The results of all tests are thrown out when the controls are not accurate and when doubt exists in our minds concerning interpretation of gross or microscopic specimens. After five years' experience we have yet to prove that we have a false positive with the animal test. In several instances we have had negative results when subsequent repetition of the test revealed positive conditions. We have occasionally found one of two guinea-pigs positive and the other negative. We interpret this as meaning that our negative observations occurred because we had not injected any tubercle bacilli, or so few that a healthy pig killed them promptly. We still believe, after a large experience with the guinea-pig, that it is the most reliable laboratory animal that we have for the study of human tuberculosis. Our long experience with this animal as a test for tuberculosis has taught us how to interpret our observations. With this knowledge, we believe that the guinea-pig will react to tubercle bacilli if a sufficient number are injected into the peritoneal cavity.

Culture of Tubercle Bacilli.—In some parts of Europe, culture of tubercle bacilli has come to be the method of laboratory diagnosis of active human tuberculosis. This method requires less time than others and, if the technic is carefully followed without error, a very few bacilli will produce a culture. We are going to try to produce cultures, using our animal experiments as controls, as soon as a comparatively standard culture medium and technic of culture is developed. In our opinion, this method of isolating tubercle bacilli will not prove more accurate than the animal test but will require less time. When considering a patient who may be a candidate for nephrectomy, this shorter method will be most efficient, if successful.

Physical Examination.—The physical examination of the urologic tract must be careful and complete. With early, nondestructive renal lesions of tuberculosis, however, there are comparatively few patients who have physical conditions in the urologic tract that help in the diagnosis of a renal lesion. In a comparatively few patients we have found lesions in the epididymis, prostate or vesicles which were positive or suggestive of tuberculosis. We believe that tuberculosis of the generative organs in the male usually means renal tuberculosis. We also believe that lesions of tuberculosis in the lower urinary or genital tract are most often secondary to renal lesions which are active at the time, or to nondestructive lesions which have healed.

Roentgen Examination.—The use of the x-rays before injection of the kidney pelves has not been very helpful. The calcified renal shadow probably due to the deposit of calcium in an old tuberculous kidney has not been a frequent finding. There was no roentgenographic evidence of tuberculosis in our early cases. The irregular mottling, typical of tuberculous calcification, occurs only after destructive lesions have formed and healing is attempted.

Cystoscopic Examination.—Our method of cystoscopic examination and ureteral catheterization is more elaborate at this time than when we began this study. Because we are examining patients who have extra-urinary lesions of tuberculosis, most of whom have been bedridden for months or years, we have to be careful in our use of anesthesia. To control pain, we use either morphine alone in large doses, or the combination of scopolamine and morphine. If this is successful, no other anesthetic is given, except the local application of cocaine. If the patient has urinary symptoms that indicate a very tender bladder, or if the cystoscope cannot be passed and the bladder distended without producing more than an uncomfortable feeling, caudal anesthesia is used. Our cystoscopic manipulation is generally longer than the usual cystoscopy, so that we must give the patient some anesthetic that will make him comfortable for from one to one and one-half hours. Our instruments are thoroughly disinfected and we believe that we come as near as possible to sterilization of our ureteral catheters. They are filled with distilled water and plugged so the water may not run out. The catheters are then boiled in distilled water for from three to five minutes, after which they are put into a 1:1,000 mercuric oxycyanide solution for one-half hour. The catheters are then thoroughly washed in sterile distilled water, both inside and out. The use of ureteral catheters which have been disinfected in some strong antiseptic solution produces negative cultures on most culture mediums because enough antiseptic solution remains in the catheter to kill organisms and thus prevent growth. We believe that the antiseptic solution may kill tubercle bacilli as well, and thus produce false negative guinea-pigs when organisms are present.

When the cystoscope is passed into the bladder, this organ is thoroughly inspected, as well as the ureteral meatus. Meatoscopy should be done carefully. Since the recent discussion of the question of reflux with contamination of the ureter and renal pelvis by bladder urine, we have watched carefully for a gaping meatus, in case this might be a finding indicating the possibility of reflux. In our experience, this is not important. There may be reflux through a closed ureteral meatus and, on the other hand, reflux may not occur through a gaping meatus. In less than half of the bladders examined we found some condition about one or the other meatus that made us suspicious of renal tuberculosis. Lesions elsewhere in the bladder, or the character of the mucosa, made us suspicious of renal tuberculosis in a few instances. Cystoscopy alone, including meatoscopy, revealed conditions suggestive of renal tuberculosis in about one fourth of the bladders examined. In the presence of repeatedly proved renal tuberculosis, unilateral or bilateral, we found the bladder negative in more than half of the examinations.

Ureteral Catheterization.—Before ureteral catheters are passed into the cystoscope and through the bladder, they are sterilized, as has been mentioned. They are then filled with sterile distilled water and by means of a needle are connected to a glass syringe filled with water. As the catheter is passed through the sheath of the cystoscope, through the bladder and through the ureter, it is constantly flushed by a stream of sterile water. When the catheters have reached the renal pelves, the syringes are disconnected and the injected water and urine are allowed to run through them. Before the cystoscope is removed from the bladder, the water valve is connected to a two-quart irrigator con-

taining a strong solution of methylene blue (methylthionine chloride-U. S. P.). This is allowed to flow into the bladder through the cystoscope until overdistention is felt. The buttocks of the patient are raised higher than his head and overdistention is continued until he complains of distress. The patient is asked to strain, as when attempting to void urine. If reflux occurs to the renal pelves, blue colored solution is obtained through the catheters. Reflux occurs infrequently. We have observed it in 1.5 per cent of the ureters examined. When it does occur, the urinary observations from this side are disregarded. We do not find it a factor in negating our high percentage of bilateral infections. Large ureteral specimens of urine are collected from each renal pelvis for guinea-pig inoculation. We believe that 20 cc. of urine is the least amount that should be obtained for centrifugation before injection into guinea-pigs.

Functional Tests.—We use indigo carmine intravenously as a functional dye test. In only an occasional case have we found a gross difference in functional tests between two kidneys that was sufficient to make us suspicious of destruction from tuberculosis. We have examined many kidneys containing large destructive lesions that did not show any evidence of lack of function as estimated by the dye tests. An estimate of renal function or the lack of renal function by means of chemical studies of the blood has been somewhat helpful, but only with large, destructive lesions.

We know from our experience that the differential functional tests cannot be relied on for help in the diagnosis of early lesions of tuberculosis. Some urologists in this country, but more in Europe, rely on the presence of pus in the catheterized urine and delay in the return of dyes from one kidney, together with the finding of tubercle bacilli, as sufficient evidence for nephrectomy. In renal phthisis, these data might be sufficient for a diagnosis.

PYELOGRAPHY

We have made 170 pyelograms during the last two years of patients who had or were suspected of having renal tuberculosis. We find the pyelograms indispensable in the diagnosis of early lesions of tuberculosis and of the greatest value in following the changes that may take place in the filling defects of the renal pelvis. We found the pyelogram the first positive localizing finding in fifty-six of our cases. We believe that bilateral pyelograms should always be made, because bilateral lesions of tuberculosis in the kidney are much more prevalent than is usually suspected. We take our bilateral pyelograms simultaneously. We always try to have the end of the ureteral catheter in the renal pelvis or at the ureteropelvic juncture and not down in the lower ureter. We are sure that both catheters are patent before pyelograms are made. The sodium iodide (12.5 per cent) is injected slowly, until the patient complains of fulness or pain in the renal area. After one kidney pelvis is filled, the other is injected by an assistant. Two syringes are always used. The amount of the sodium iodide injected into each pelvis is accurately measured and this amount is always aspirated immediately after the film has been made. If the patient complains of pain or fulness in one or both renal areas, the pain must be completely relieved before our efforts at aspiration of the renal pelves are stopped.

Many urologists condemn the use of the pyelogram as a diagnostic aid for renal tuberculosis. Still others insist that a bilateral pyelogram should not be made under any circumstances. From our experience, we believe that pain after pyelography is not due to overdistention, which is easily and completely relieved by aspiration. Trauma to the ureter and pelvis of the kidney with bleeding and swelling cause pain because of obstruction and blood clots which pass down the ureter. If the ureter is sufficiently traumatized, a spasm may prevent the emptying of the renal pelvis and thus produce pain. The pain that comes after pyelography may and often does come after ureteral catheterization alone, and we believe that it is caused by the passage of the ureteral catheter and the consequent trauma, rather than by the injected medium or by overdistention.

The only exception to this statement occurs after the introduction of virulent infection into the renal pelvis or ureter, or both, because the ureteral catheters are not clean, or the injected medium is contaminated. The high temperature and chills that may occur after the introduction of virulent infection through the catheter are the result of poor drainage because of swelling from trauma and infection. Sodium iodide, if uncontaminated, may be given intravenously without producing fever or other trouble, and it will not produce fever, chills, anuria or death if injected uninfected into the renal pelvis. One may condemn the practice of taking bilateral pyelograms because of the possibility of injecting contaminated material into both renal pelves, rather than into just one, but we believe that it is absolutely unnecessary to inject infected material in any instance. The urologist should perfect his cystoscopic technic against infection as he does his surgical technic. All patients after pyelography should have rest in bed with morphine if they complain of the least pain. Fluids should be taken liberally. We have had few reactions after pyelography or cystoscopy when this technic was used. We have never observed a patient in whom the pyelogram was even a remote factor in producing the spread of tuberculosis in the kidney or in the blood stream.

The early pyelographic filling defect found with renal tuberculosis is produced by a tiny area of renal destruction and is called a cortical abscess. This may be so tiny that it is overlooked, and usually occurs at the tip of a calix. In many instances we are sure, in spite of careful survey of our films, that we have overlooked these tiny filling defects. As more pyelograms of infected kidneys are studied, we shall learn to recognize them more easily.

The old, or large, destructive lesions are familiar to all urologists and these will not be discussed.

The pyelogram has been of great use to us in following the changes that may take place, not only in the size of the lesion but in its contour. From some experience we have learned to judge just how much resistance the kidney has against the tuberculous infection. We have watched destructive lesions for years and can judge from the change in size and contour of the filling defect just when nature has ceased trying to smother the infection and when surgery should be advised. We have observed many patients with a primary bilateral renal tuberculosis with destruction on one side but no destruction and eventual healing on the other side. We have watched the destructive lesion remain active, but nonprogressive, during the time that the other kidney was healing small, nondestructive lesions. We have observed the reverse, when a destructive lesion progressed in four months so that the entire kidney was

destroyed and a nondestructive lesion on the other side became active, with subsequent destruction.

BILATERAL LESIONS

We have demonstrated that bilateral lesions of tuberculosis may occur in about 57 per cent of cases. Our percentage of bilateral lesions is high because we examine our patients repeatedly during the stage of invasion, before there is sufficient resistance in one or both kidneys to control the infection. We are sure that our percentage is not high because of reflux or contamination of the catheter, since our present cystoscopic technic will eliminate most of the possibility of error from contamination.

The reports in the literature concerning bilateral lesions of renal tuberculosis which are discovered only after surgery has been done are not encouraging. We believe that our percentage of bilateral lesions is high because we have made the diagnosis of bilateral renal tuberculosis before rather than after nephrectomy, but that it is not higher than it should be. Since we have demonstrated that a kidney containing an active lesion of tuberculosis may eliminate tubercle bacilli at one time and not at another, we believe that repeated studies of the kidney and the urine which it excretes must be made before an accurate diagnosis is possible. Many surgeons report complete recovery after nephrectomy for renal tuberculosis, with healing of bladder or genital lesions as well, and use this experience as an argument that the infected kidney should be removed at once if the other kidney is negative after one examination. In the cases in which such treatment is successful, it is because the patient has a unilateral renal lesion and has developed good resistance against tuberculosis, so that he is able to arrest the remaining lesions. When the patient does not completely recover after nephrectomy, it may be because a bilateral lesion was not discovered or because the patient may not have been treated until he developed resistance to control his infection.

TREATMENT OF RENAL TUBERCULOSIS

In a discussion of the treatment of renal tuberculosis I must call attention to the two classes of lesions as they are encountered: first, the tiny, hematogenous lesion that is nondestructive, and, second, the phthisical, or destructive, lesion. It is known that the nondestructive lesion will heal, and I believe that the patient with this type of lesion should have sanatorium treatment until the urine is free from pus and tubercle bacilli and until he has demonstrated his ability to heal or control any other lesions of tuberculosis which may be present.

When one kidney has a nondestructive lesion and the other kidney a destructive one, the patient should be under treatment in a sanatorium until arrest of the nondestructive lesion has occurred and until he has developed a resistance against tuberculosis. The kidney containing the destructive lesion may then be removed.

When a patient has a destructive lesion in only one kidney and no activity in the lungs, he should have a nephrectomy. This may be done in the presence of other urinary lesions, or lesions elsewhere than in the lungs. Repeated tests of the second kidney should be made, however, before surgery is undertaken, and preoperative treatment should be continued until the patient's resistance is sufficient to withstand the operation and to control all lesions of tuberculosis that may be present.

Nephrectomy is only the beginning of the treatment, particularly if bladder or other urinary lesions are present. The patient should have the advantage of sanatorium treatment until the urinary or bladder symptoms have disappeared, and following this he should be watched constantly for evidence of reactivity of tuberculosis elsewhere in the body. If other lesions become active, treatment should be continued until all are arrested. In every instance, the patient should have the advantage of sanatorium treatment after nephrectomy until no evidence of activity of tuberculosis can be found.

In my opinion, the removal of one of two kidneys, both known to contain destructive or nondestructive lesions of tuberculosis, is not good surgery. Such a patient should have only sanatorium treatment. Experience has taught that surgery in this instance shortens rather than lengthens the patient's life. I have been much encouraged by my experience with bilateral lesions in which the patient has developed resistance sufficient to control the destructive lesions so that they remain nonprogressive for many months. I have been much impressed with the results of sanatorium treatment for renal tuberculosis when for some reason surgery is not advisable. I have seen lesions grow smaller, with disappearance of all urinary symptoms, except pus and tubercle bacilli in the urine. In a few instances I have seen destructive lesions become quiescent so that only pus cells could be found in the urine. In our laboratory there are kidneys that resisted a destructive lesion of tuberculosis so completely that the lesions were entirely encapsulated and no other evidence of active tuberculosis could be found elsewhere in the kidney. This isolation of the lesion has been so complete that I have wondered about the possibility of partial removal of the kidney, when nephrectomy is contraindicated.

When nephrectomy is apparently indicated in a patient who has long suffered from tuberculosis, one must remember to look for amyloid degeneration in the kidney. This condition may have interfered with renal function to such an extent that operation is not advisable.

The treatment of renal tuberculosis is not a surgical problem alone but a medicosurgical one. I do not wish to change the method of treatment of the proved unilateral lesions of renal tuberculosis which the urologic surgeon now recognizes. I want to emphasize the importance of the early lesion of renal tuberculosis and its pathology. Since it is possible to recognize this early lesion, I believe that, if sufficient attention is given to its discovery before destruction occurs, many patients with renal tuberculosis may be cured before their kidneys are destroyed and before the bladder becomes chronically infected.

CONCLUSIONS

1. Renal tuberculosis is not primarily a local condition but is secondary to a generalized disease.

2. To study the early lesion of renal tuberculosis, the patient must be under observation in a sanatorium. It is during the active stage of the original pulmonary or other lesion of tuberculosis that the kidney becomes infected and the early lesions develop.

3. Renal tuberculosis is in the majority of cases a bilateral condition.

4. Repeated examinations are necessary to prove the presence of a nondestructive tuberculous infection in an apparently sound kidney. One infected kidney should not be removed until it has been proved conclusively that the other does not contain a destructive lesion.

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5. Nondestructive lesions will heal, and the patient with this type of lesion should have the advantage of sanatorium treatment to assist him in building up a resistance against tuberculosis.

6. Nephrectomy is only the beginning of treatment for renal tuberculosis. After operation, the patient should be kept in a sanatorium until no evidence of active tuberculosis can be found, urinary or otherwise.

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TUBERCULIN THERAPY IN UROLOGIC TUBERCULOSIS *

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Tuberculin has been used in the treatment of urologic tuberculosis for a good many years. Not long after Koch introduced tuberculin it was utilized in the treatment of tuberculosis of the genito-urinary tract. Since then clinical reports and data have accumulated down through the years which differ widely, varying from enthusiasts who believed tuberculin to be a cure to others who were positive that it was without value. Emerging from the mass of statistics and the great amount of work that has been done there is perhaps a discernible trend to the position properly occupied by tuberculin therapy in urologic tuberculosis.

The reports of the results with tuberculin therapy logically divide into three groups. There were those who found it of value, others who were uncertain whether it was effective, and those who believed that it did not have any value.

Among those who believed tuberculin therapy of value, Pardoe [1] in 1905 was an early advocate. Even before him but in what also might be described as the era of large dosage of tuberculin and resultant general reactions, Schulze, Fritze, and Wright and Douglas [2] reported good results. Israel [3] in 1902 and Casper [4] in 1909 advised tuberculin treatment in bilateral renal tuberculosis and following surgical treatment of unilateral renal lesions. Karo [5] was enthusiastic with his results; he mentioned favorable reports also by Lenhart, Pielicke and Leedon Graham. Lenhartz recommended tuberculin in the upbuilding of patients preparatory to surgical care. Wildbolz [6] reported treating thirty-one renal tuberculosis patients with tuberculin, Mantoux [7] seventy patients and Bachrach and Necker [8] twelve urologic tuberculosis patients; the general health of these patients improved, but all the writers were doubtful whether there was any appreciable effect on the local tuberculous lesions. Hawes and Floyd [9] reported beneficial results in five patients, Pedersen [10] in two patients and Whiteside [11] in four patients. Belfield [12] seemed convinced of the value of tuberculin. Pottenger cited Dillingham's [13] report of the good results of treatment, which included tuberculin, of fifty patients with tuberculosis of the kidney and bladder. Birnbaum,[14] Mieres,[15] Hofmann,[16] Cressy,[17] Wossidlo [18] and Ezickson [19] reported good results with their patients. Hammond [20] noted improvement, but he doubted whether permanent cures resulted. Cunningham [21] and Nitch [22] suggested tuberculin therapy after surgical treatment. Stevens,[23] in summarizing the results of twelve nephrectomies for renal tuberculosis during pregnancy, advised tuberculin in the postoperative care.

In the textbooks and other works on urology there are advocates of tuberculin. Lowsley and Kirwin [24] advise its use in the postoperative treatment of urogenital tuberculosis and they think that it is sometimes helpful in bilateral renal tuberculosis. Keyes [25] includes the intelligent use of tuberculin in the prolonged course of antituberculosis hygiene to be carried on after surgical treatment of genito-urinary tuberculosis. Barney [26] suggests tuberculin in the expectant and postoperative care of genital tuberculosis; Caulk [27] is inclined to believe that it may be of value in the treatment of tuberculosis of the bladder; O'Neill [28] believes that improvement which resulted from the treatment of ureteral and renal tuberculosis could be attributed to the judicial combination of surgery, hygiene, tuberculin and a careful consideration of the individual needs of the patients. Herringham [29] suggests tuberculin treatment of renal tuberculosis when surgery cannot be performed. Morton [30] states that many urologists find tuberculin of value after nephrectomy for tuberculosis; also after surgical treatment of tuberculosis of the epididymis.

Chetwood [31] believes there is difference of opinion regarding the value of tuberculin in urogenital tuberculosis. He states that judgment of its value is still under suspension, although he includes it in the expectant treatment of renal tuberculosis. Kelly and Burnham [32] are not convinced of the value of tuberculin but they thought that it did no harm.

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1. Pardoe, J. G.: The Treatment of Tuberculosis of the Urinary System by Tuberculin, Lancet **2**: 1766, 1905.

2. Wright, A. E., and Douglas, S. R.: On the Action Exerted on Tubercle Bacillus by Body Fluids, Lancet **2**: 1138, 1904.

3. Israel: Chirurgie klinische der Nierenkrankheiten, Berlin, 1902.

4. Casper: Die Diagnose und Thetapie der Blasen und Nierentuberkulose, Klin. Wchnschr. **46**: 1005, 1909.

5. Karo, W.: Tuberculin for Diagnosis and Therapy of Renal Tuberculosis, M. Rec. **2**: 554 (Oct.) 1909.

6. Wildbolz: Tuberkulin Behandlung der Nierentuberkulose, Klin. Wchnschr. **47**: 26, 1216, 1911.

7. Mantoux: Le traitement par la tuberculine des tuberculoses urinaires, Presse méd. **18**: 705, 1910.

8. Bachrach and Necker: Zur Tuberkulinbehandlung der Urogenitaltuberkulose, Wien. klin. Wchnschr. **24**: 1368, 1911.

9. Hawes, J. B., 2d, and Floyd, Cleveland: Boston M. & S. J. **162**: 1, 1910.

10. Pedersen, James: Two Cases of Renovesical Tuberculosis Treated with Bacillus Emulsion, New York M. J. **93**: 371, 1911.

11. Whiteside, G. S.: The Use of Tuberculin in the Treatment of Surgical Urogenital Tuberculosis, J. A. M. A. **59**: 2232 (Dec. 21) 1912.

12. Belfield, W. T., in discussion on Whiteside (footnote 11).

13. Dillingham: A Report of Fifty Cases of Tuberculosis of the Kidney and Bladder Clinically Cured Without Operation, read before the California State Medical Society, April, 1916; cited by Pottenger, F. M.: Clinical Tuberculosis, ed. 2, St. Louis, C. V. Mosby Company **2**: 103, 1922.

14. Birnbaum: Das kochsche Tuberkulin in der Gynäkologie und Geburtshilfe, Berlin, Julius Springer, 1907.

15. Mieres, I.: Heliotherapy Plus Tuberculin in the Treatment of Tuberculosis of the Urinary Apparatus, Prensa méd. argent. **6**: 66 (July 30) 1919, abstr. J. A. M. A. **73**: 1810 (Dec. 6) 1919.

16. Hofmann, W.: Über einem Fall von konservativen gehilter Nierentuberkulose, Zentralbl. f. Chir. **52**: 1025 (May 9) 1925.

17. Cressy, R.: Genito-Urinary Tuberculosis Treated with Massive Doses of Tuberculin, Lancet **1**: 542, 1920.

18. Wossidlo, E.: Zur konservativen Behandlung der Nierentuberkulose, Zentralbl. f. Chir. **48**: 1182 (Aug. 20) 1921.

19. Ezickson, W. J.: Tuberculosis of the Genital Tract Treated with Tuberculin, J. Urol. **17**: 567 (June) 1927.

20. Hammond, T. E.: Tuberculosis of the Genito-Urinary System, Tubercle **6**: 490 (July) 1925.

21. Cunningham, J. H., Jr.: The Treatment of Genital Tuberculosis in the Male, Surg. Gynec. Obst. **23**: 385 (Oct.) 1916.

22. Nitch, C. A. R.: Urogenital Tuberculosis, Brit. M. J. **1**: 883 (May 14) 1927.

23. Stevens, W. E.: Renal Tuberculosis During Pregnancy, Surg. Gynec. Obst. **39**: 750 (Dec.) 1924.

24. Lowsley, O. S., and Kirwin, T. J.: Textbook of Urology, 1926, p. 676.

25. Keyes, E. L.: Urology, 1923, pp. 394, 403.

26. Barney, J. D., in Cabot, Hugh: Modern Urology **1**: 570, 577, 1924.

27. Caulk, J. R., in Cabot, Hugh: Modern Urology **2**: 134, 1924.

28. O'Neill, R. F., in Cabot, Hugh: Modern Urology **2**: 574, 1924.

29. Herringham, W. P.: Kidney Diseases, 1913, p. 347.

30. Morton, H. H.: Genito-Urinary Diseases and Syphilis, 1924, pp. 454, 497.

31. Chetwood, C. H.: The Practise of Urology, 1913, pp. 85, 664.

32. Kelly, H. A., and Burnham, C. F.: Diseases of Kidneys, Ureter and Bladder **2**: 89, 1914.

Young and Davis [33] compare the results of tuberculin treatment with those of operative treatment, citing forty-seven cases of urogenital tuberculosis in which for various reasons the patients had not been operated on. They found the results from tuberculin disappointing. Hyman [34] reported treating thirteen urogenital tuberculosis patients with Rosenbach's tuberculin. He concluded that it was of no definite value. Frank [35] did not see any good results.

At the clinic for the treatment of inoperable and postoperative urologic tuberculosis, Urological Department (James Buchanan Brady Foundation) of the New York Hospital, tuberculin has been in use for more than three years. It is not used alone but it is included in the regimen of treatment as an adjunct or subsidiary agent. The regimen comprises, besides tuberculin, the hygienic, dietetic and rest treatment of tuberculosis, mercury vapor quartz light therapy, heliotherapy, and the indicated urologic treatment. The general plan is to combine the urologic treatment with the treatment of tuberculosis to the extent to which it is applicable and thus develop a regimen of treatment which may be adapted to the needs of the individual patient. Those patients with active pulmonary tuberculosis in addition to their urologic lesions are not given tuberculin.

The theory on which tuberculin is given a place in the general plan of treatment is the present-day accepted theory that tuberculin causes an inflammatory focal reaction at the site of the disease and thus promotes fibrosis of the lesion. It is recognized that it is difficult to bring about unharmful focal reactions since the characteristics of the lesions vary so widely, particularly in renal tuberculosis. In the same renal lesion, young tubercles, old tubercles, small uncaseated tubercles and large pus filled or fibrotic cavities frequently coexist. It is evident that the effect of a given amount of tuberculin on the various lesions must vary widely. Therefore it has been deemed best to adhere to the plan of small dosage, the appearance of any evidence of local, focal or constitutional reactions being relied on as the guide to the dosage. This method is of course open to criticism on the grounds that focal reactions are not always obtained when there is no subjective or objective evidence of them. However, the method seems to have worked out satisfactorily.

Koch's old tuberculin is the only tuberculin used. It was not chosen for any particular reason except a somewhat more extensive experience in its use, and it has been suggested that it causes more inflammatory changes at the focus of the disease.

Serial doses begun in small amounts are slowly increased until evidence of a local, focal or constitutional reaction occurs; then the dose is reduced and continued with a cautious increase until a reaction again occurs. It is again reduced and continued as before. The usual beginning dose is 0.1 cc. of a one to ten million dilution of tuberculin. The injections are given subcutaneously on the outer aspect of the upper arm.

The serial dilutions of tuberculin are prepared in the following manner, which is, at least in part, widely used: Seven small wide mouthed glass stoppered bottles, a graduated 1 cc. glass pipet and a graduated 10 cc. glass pipet are sterilized. In one of the glass bottles, 1 cc. of Koch's old tuberculin is placed. To this is added 9 cc. of the diluent, consisting of distilled water to which 0.8 per cent of sodium chloride and 0.25 per cent of phenol has been added and sterilized by autoclave. The bottle is labeled O. T. 0.1, and for convenience the date of the preparation is also placed on the label. The bottle is shaken vigorously by hand and 1 cc. is withdrawn and placed in one of the remaining bottles. To this is added 9 cc. of the diluent and the bottle is labeled O. T. 0.01. After shaking, 1 cc. is then withdrawn from this bottle and the dilutions are carried on in the same manner through the remainder of the seven bottles. There are then seven bottles labeled as follows: O. T. 0.1; O. T. 0.01; O. T. 0.001; O. T. 0.0001; O. T. 0.00001; O. T. 0.000001; O. T. 0.0000001. The tuberculin is not designated in milligrams or grams, as these liquid measurements have been found practical for both estimating the individual dosage for a patient and for record keeping. The dilutions are kept in the refrigerator in the intervals between clinic sessions. Fresh dilutions are made about every two weeks during summer and monthly in winter. The diluent has been kept as long as a year without evident deterioration.

TABLE 1.—*Inoperable Urologic Tuberculosis*

Case	Sex*	Age	Lesion	Duration of Treatment	Result
1	♂	28	Bilateral renal tuberculosis	8 mo.	Stationary
2	♂	23	Bilateral renal tuberculosis	3 mo.	Improved
3	♀	24	Bilateral renal tuberculosis	20 mo.	Retrograding
4	♂	27	Bilateral renal tuberculosis	18 mo.	Improved
5	♂	24	Bilateral renal tuberculosis	3 mo.	Improved
6	♀	21	Bilateral renal tuberculosis	12 mo.	Improved
7	♂	38	Bilateral renal tuberculosis	7 mo.	Improved
8	♀	27	Bilateral renal tuberculosis (nephrectomy)	10 mo.	Improved
9	♂	18	Bilateral renal tuberculosis	12 mo.	Improved
10	♂	37	Bilateral renal tuberculosis	7 mo.	Retrograding
11	♂	16	Bilateral renal tuberculosis	11 mo.	Stationary
12	♂	28	Testicular tuberculosis (other testicle removed for tuberculosis)	21 mo.	Stationary
13	♂	48	Tuberculosis of epididymides (refused operation)	7 mo.	Improved
14	♂	25	Tuberculosis of prostate and seminal vesicles; renal tuberculosis ?	11 mo.	Retrograding

* In the tables, ♂ stands for male and ♀ for female.

Practically all types of urologic tuberculosis have been under treatment, as shown in the groups tabulated. Only patients who have been treated for three months and longer have been included. None have had active pulmonary tuberculosis, as it has been the policy to recommend tuberculosis sanatorium care in such cases. A considerable number have signs indicative of inactive lung disease, but this has not been found a deterrent to tuberculin treatment. Four clinic periods are held each week. The usual routine is to see each patient twice weekly, at which times tuberculin, urologic treatments and light therapy are administered. Weight, temperature, pulse and respiration observations are made at each clinic visit.

In table 1 are the inoperable urologic tuberculosis patients. This group is of especial interest in that their lesions are usually extensive and of comparatively long standing, and the symptoms are well marked. Denied relief by surgical measures, their only hope for palliation and relief is through an antituberculosis regimen. The suffering and inconvenience which the bilateral renal tuberculosis patients undergo is often exceedingly trying, and any measure of success in making them more comfortable and rendering their symptoms benign is worth while.

Eight seem improved, three seem stationary and three are apparently retrograding. It is interesting that

33. Young, H. H., and Davis, D. M.: Young's Practise of Urology **1**: 320, 334, 1926.

34. Hyman, A.: The Treatment of Genito-Urinary Tuberculosis with Rosenbach's Tuberculin, J. A. M. A. **66**: 1379 (April) 1916.

35. Frank: Über Nierentuberkulose, Centralbl. f. Grenzgeb. d. Med. u. Chir. **14**: 249, 1911.

seven are working at their usual occupations, five are unable to work and two are working part time. Patient 3 improved for about two years in a rather striking manner. Several months ago she became ill with the grip and developed pain in the left kidney region along with an increase of other symptoms which still persist and apparently indicate an exacerbation of the lesion in the left kidney. She is gradually retrograding and she has been advised to submit to a left nephrectomy as a life prolonging measure. Patient 8 was admitted to the clinic with the diagnosis of bilateral renal tuberculosis, apparently inoperable. She did not respond to treatment and failed steadily. After a short time it was determined that her symptoms came mainly from the right kidney, where the disease seemed to be extending rapidly. The right kidney was removed in the hope that it would prolong her life. After the nephrectomy she was referred back to the clinic for treatment and she has improved a great deal. The remaining kidney is tuberculous, but the patient is getting along well and has returned to her usual occupation of waitress.

In the treatment of patients with inoperable lesions, a long time is usually required to effect lasting improvement. Changes in symptoms are gradual and there are periods of exacerbation and remission. The patients are liable to become restless and it is difficult to persuade them that it is necessary to adhere to the regimen of care for a long period of time.

In table 2 are the postoperative patients. Into this group comes almost the entire field of urologic tuberculosis surgery and it is especially necessary to adapt the regimen of treatment to the individual needs of each patient. Many of the patients are referred to the clinic for postoperative care shortly after their operations were performed. Others are referred after surgical treatment at other hospitals, and occasionally considerable time has elapsed since their operations. The treatment of this group varies widely; some have wide open postoperative wounds, others have stubborn postoperative sinuses, some have severe bladder complications, and practically all need dietetic and hygienic advice to aid them in regaining their strength and weight. As a rule the results are quite satisfactory and the chief drawback to carrying out a prolonged course of postoperative treatment is that many patients soon feel fairly well and they discontinue the treatment of their own volition.

There were twenty-five postoperative nephrectomy patients. Twenty-one seem improved, three are stationary and one is apparently retrograding. Two patients had an epididymectomy in addition to nephrectomy; one improved and one retrograded. Of the eight postoperative epididymectomy patients, six improved, one seemed stationary and one retrograded. Patient 49 was treated for three months and is classified as having retrograded although he thought he was well and discontinued treatment against our advice. He reappeared about a year later ill with active pulmonary tuberculosis, and arrangements were made for his admission to a tuberculosis sanatorium. Patient 50 was treated for a discharging tuberculous testicle and after six months he discontinued treatment of his own accord, his condition apparently retrograding. Patient 51 was treated after a seminal vesiculectomy for tuberculosis. His wound remained open, his general health failed and he later died of a complicating tuberculous meningitis. His death is the only death that has occurred in the entire three years that the clinic has been in operation.

Besides the inoperable and postoperative patients there were four other patients who were referred to the clinic for a general upbuilding treatment preparatory to nephrectomy for tuberculosis. Three did very well. Probably preoperative care is a somewhat neglected field and it might be more generally utilized with the view of lessening immediate reaction to surgery as well as shortening postoperative care.

It is difficult to evaluate the results of treatment with tuberculin and particularly when it is used as a part of a general regimen. Also there are other factors, such as the natural tendency of most postoperative patients to improve and the periods of latency of symptoms which occur in both inoperable and postoperative urologic tuberculosis patients. The obvious end to be desired would be to learn whether urologic tuberculosis patients of these groups, whose active lesions were localized in the genito-urinary tract, were benefited by

TABLE 2.—*Postoperative Urologic Tuberculosis*

Case	Sex	Age	Operation	Duration of Treatment	Result
15	♂	23	Nephrectomy	29 mo.	Improved
16	♀	50	Nephrectomy	3 mo.	Stationary
17	♀	44	Nephrectomy	7 mo.	Improved
18	♀	44	Nephrectomy	28 mo.	Improved
19	♂	23	Nephrectomy	14 mo.	Improved
20	♀	40	Nephrectomy	35 mo.	Improved
21	♀	33	Nephrectomy	21 mo.	Improved
22	♂	28	Nephrectomy	4 mo.	Stationary
23	♀	50	Nephrectomy	6 mo.	Improved
24	♀	48	Nephrectomy	8 mo.	Improved
25	♂	23	Nephrectomy	18 mo.	Improved
26	♀	33	Nephrectomy	19 mo.	Improved
27	♀	46	Nephrectomy	15 mo.	Improved
28	♀	42	Nephrectomy	29 mo.	Improved
29	♂	49	Nephrectomy	2½ mo.	Retrograding
30	♂	34	Nephrectomy	6 mo.	Improved
31	♀	43	Nephrectomy	11 mo.	Improved
32	♂	28	Nephrectomy	4 mo.	Improved
33	♀	28	Nephrectomy	15 mo.	Improved
34	♂	21	Nephrectomy	16 mo.	Improved
35	♀	26	Nephrectomy	18 mo.	Improved
36	♀	72	Nephrectomy	13 mo.	Stationary
37	♀	21	Nephrectomy	30 mo.	Improved
38	♂	50	Nephrectomy	7 mo.	Improved
39	♀	55	Nephrectomy	8 mo.	Improved
40	♂	45	Nephrectomy and epididymectomy	24 mo.	Improved
41	♂	41	Nephrectomy and epididymectomy	8 mo.	Retrograding
42	♂	13	Epididymectomy	5 mo.	Improved
43	♂	61	Epididymectomy	4 mo.	Improved
44	♂	19	Epididymectomy	3 mo.	Improved
45	♂	22	Epididymectomy	2½ mo.	Improved
46	♂	26	Epididymectomy	4 mo.	Improved
47	♂	28	Epididymectomy	6 mo.	Improved
48	♂	27	Epididymectomy	4 mo.	Stationary
49	♂	21	Epididymectomy	3 mo.	Retrograding
50	♂	40	Drainage of tuberculous testicle	6 mo.	Retrograding
51	♂	28	Seminal vesiculectomy	10 mo.	Died

tuberculin therapy administered in the manner and according to the plan that has been carried out. Such a conclusion, if it could be arrived at, would be rather an endorsement of the method than an argument for the general use of tuberculin in this form of tuberculosis.

The total number treated in this series of inoperable, postoperative and preoperative patients was fifty-five. Of the fifty-five, thirty-nine were improved, eight seemed stationary, seven retrograded and one died. These patients received not only tuberculin treatment but mercury vapor quartz light therapy, medicinal treatment, advice regarding diet, rest and hygiene, and urologic treatment; some carried on a form of heliotherapy and occasionally some rested in the country for varying periods. Which of these were the most favorable factors cannot be determined. There is no way of rating the relative values. The impression gained, however, is that tuberculin has been helpful.

In the three years during which the tuberculin has been administered, it has become increasingly evident

that there are few if any standards for carrying on tuberculin therapy in this form of tuberculosis. For example it is a not infrequent experience to find a postoperative patient, whose urine and resected kidney both showed tubercle bacilli, so resistant to tuberculin that a reaction seems almost impossible to elicit. Other patients with similar conditions react to the weakest dilutions of tuberculin and continue the reactions for considerable time. In general, those patients in good health with benign well localized lesions react more readily, while other patients who are debilitated and who have more active local lesions are less liable to react so readily. The method of determining the dosage cannot be followed strictly at all times. It must be varied with the exacerbations and remissions of the disease, and the clinical manifestations are always the best guides. The giving of tuberculin requires some knowledge of its rationale, and it is necessary to exercise careful judgment in its application.

CONCLUSION

It is evident that tuberculin is not a cure for urologic tuberculosis. The many years it has been used and the extent of its usage are convincing proof.

Nevertheless it cannot be dismissed as not having any value. There is considerable evidence that it aids in building up the general health of patients with this type of tuberculosis. In the treatment of inoperable and postoperative patients it has seemed to be a helpful factor in the regimen of treatment.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. THOMAS AND WANG

DR. W. J. PENNOCK, Spokane, Wash.: Dr. Wang is to be congratulated on the value he placed on tuberculin. He did not become too enthusiastic, but tried to ascribe to tuberculin its real value. He spoke of the wave of enthusiasm about tuberculin, and stated that it has passed. I hope that Professor von Lichtenberg will speak of its use in Germany. In Vienna there is no particular enthusiasm regarding tuberculin therapy. It is queer but the use of this has passed largely into the hands of the neurologists who are using it in paretic cases. I spoke to Professor Legueu about it recently, and he said that the French had practically abandoned its use at present. I feel that work of the character which Dr. Wang has been carrying on should be carried out to a greater extent. These cases are about as discouraging and hopeless as any we have to deal with and careful work should be done to see whether tuberculin therapy will be a helpful factor in their treatment.

DR. ALEXANDER H. PEACOCK, Seattle: I wish to mention two types of tuberculous kidney. The first is the kidney with a small lesion in which we occasionally find tubercle bacilli in the urine with pus cells, and which never becomes the caseous, erosive type. There are many forms of treatment, but those who watch these cases carefully will often notice that these patients, under hygienic and supportive treatment, as in pulmonary cases, have a tendency to heal themselves. This teaches us a lesson in that these patients should be watched carefully and surgery should not be recommended too early. It is a slow process in most cases and a little more time spent in observation will react to the benefit of the patient. We must not forget that the solution of renal tuberculosis is not surgery alone, but that the body itself has the ability to aid greatly in curing and resisting the process. This is true not only of renal tuberculosis but of the pulmonary and glandular types. There is another type of renal tuberculosis that should be watched carefully and in which surgery should be delayed, and that is the type in which there is a coexistent nephritis. This is not uncommon and it is in this type of case that surgery has had bad results. Every patient should be carefully investigated for evidences of nephritis, which many of them have. Dr. Wang's work with tuberculin is most interesting, but in my experience this work calls for a man who is an artist, who feels out his patient as to dosage and reaction; in the hands of those who know little about it it is dangerous. It undoubtedly is of value in the hands of those who know how to use it properly.

DR. WILLIAM E. STEVENS, San Francisco: Dr. Thomas lays particular stress on pyelography. This is a helpful diagnostic procedure at times. Many urologists, however, oppose its use in the presence of renal tuberculosis, asserting that in almost every case if the process is sufficiently advanced to produce changes in the kidney pelvis, tubercle bacilli and other abnormal constituents will be found in the urine Simple urography is often a valuable diagnostic aid in these cases as areas of tuberculous calcification are not uncommon. Tuberculin has frequently been helpful to me in the treatment of both renal and lower urinary tract tuberculosis. A few years ago Dillingham of Los Angeles stated that he had produced clinical cures with this preparation in a series of fifty cases. The greatest value of tuberculin lies in the treatment of inoperable cases, especially in advanced tuberculosis of both kidneys.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: There is no question in my mind as to whether or not we should use pyelography in the diagnosis of renal tuberculosis. Although there are those who regard this method of diagnosis as being unnecessary as well as dangerous, I have never seen any harm result from its use. It may occasionally cause temporary renal irritation in cases in which insufficient pelvic drainage exists, but serious complications seldom if ever result. However, I would not advise its promiscuous use in all cases. Whenever it is possible to make a diagnosis of renal tuberculosis without urography it should, of course, not be used. Nevertheless, I think Dr. Thomas is right in saying that it frequently is the only way that the lesion can be recognized. The diagnosis of early renal tuberculosis is frequently made only after repeated guinea-pig inoculations or long study of the case and may easily be overlooked if the usual clinical methods are employed. Pyelography will often demonstrate deformity in such cases, which will clear up the diagnosis when other methods are uncertain. In fact, the amount of deformity shown in the pyelogram with an early limited lesion is often surprising. As Dr. Thomas pointed out, guinea-pig inoculations are notoriously uncertain in their results, and renal functional tests are even more so. Therefore, when the diagnosis is in doubt urography offers the most valuable aid at our command and I can see no possible objection to its use. One of the greatest difficulties in the study of renal tuberculosis is to determine whether the disease is unilateral or bilateral. Dr. Thomas believes that many cases are bilateral. This may be true, but it may be difficult to determine it, particularly when the lesion is limited. It has recently been shown that guinea-pig inoculations are frequently positive from a healthy kidney as the result of regurgitation of tubercle bacilli from the bladder.

DR. OSWALD S. LOWSLEY, New York: I have never seen any harmful results from pyelography in tuberculosis. I think it is wrong to take out any kidney when the function is normal, regardless of whether one finds tuberculosis or the pyelogram shows a lesion. It does not harm the patient to wait, and therefore we make it a rule never to remove a kidney unless there is a destructive lesion and diminution of function. Our attention was first brought to the use of tuberculin by visiting Canny Ryall's clinic in London. He had a large series of patients. I saw them come in to receive tuberculin, and they all looked so healthy and happy that it attracted one's attention immediately. They give tremendous doses in that clinic, even up to 0.5 cc. of old tuberculin. This looked dangerous to me. Guinea-pig inoculations are becoming more and more unsatisfactory. Guinea-pigs are subject to pneumonia in epidemics, and all that sort of thing, and are very unsatisfactory at times. The potato culture is more helpful and may displace the long, tedious guinea-pig method of inoculation.

DR. E. L. KEYES, New York: I agree with Dr. Braasch that there are certain cases in which one can decide only by the pyelogram whether or not a kidney should come out. Dr. Lowsley said that, in spite of a pyelogram showing a lesion, if there is normal function the kidney should not be

removed. I have twice removed kidneys when the kidney showed an actual excess of function apparently on the diseased side. The kidneys were grossly tuberculous and there was no question of the propriety of removing them.

DR. A. J. CROWELL, Charlotte, N. C.: I wish to emphasize the point made by Dr. Lowsley. Guinea-pig inoculation with us has been unsatisfactory and the potato culture has been quite satisfactory. If one will use the potato culture, one will come to depend on it more and more and less and less on the guinea-pig inoculation.

DR. PAUL O. FERRIER, Pasadena, Calif.: In southern California guinea-pig inoculation is used very largely. It is perfectly astonishing how many of our patients have prolonged clinical cures. That does not mean that surgery should not be used, but I have seen a patient with a sinus that had persisted for eight months and that patient was cured by Dr. Wang.

DR. P. E. MCCOWN, Indianapolis: I wish Dr. Wang would tell us how he uses tuberculin. We know these patients are constantly being inoculated by tuberculin from their lesions. Is the use of tuberculin confined to the afebrile group?

DR. GILBERT J. THOMAS, Minneapolis: Concerning reflux, at the present time we are very careful to see that reflux does not occur in the patients whom we examine. Most of our patients with early renal tuberculosis show few abnormalities on cystoscopic examination. Their bladders and ureteral orifices may look absolutely normal. In spite of the fact that many times the bladders appear normal and no pathologic changes can be seen around the ureteral orifices, we have attempted to produce reflux by overdistending the bladder with a solution of methylene blue (methylthionine chloride-U. S. P.) when the ureteral catheters are in place in the ureters. It is our opinion that if reflux is present, it should occur when the ureteral catheters are within the ureter. If it does occur, methylene blue is obtained through the ureteral catheters. Reflux has been present in only 1.5 per cent of the early cases of renal tuberculosis. When it is present, we consider the specimen from this side contaminated. Pyelography has on many occasions given us the only evidence that the patient has renal tuberculosis. We do not use the pyelogram when large, destructive lesions are present and pyonephrosis is evident. Among the slides that I showed was that of a large, destructive lesion of tuberculosis which was produced during four months. This patient should not have had a pyelogram, but in this instance the pyelogram was made to demonstrate the amount of destruction occurring in this kidney. We find the pyelogram indispensable in the diagnosis of bilateral lesions. The last slides that I attempted to show were to demonstrate the tiny lesions that may occur with beginning destruction from tuberculosis. We are reviewing our pyelograms carefully, because we are coming to believe that when tubercle bacilli are found in the urine, in the majority of instances we can find very tiny filling defects. Many times we have positive guinea-pig tests with apparently normal pyelograms. When these are reviewed, tiny filling defects may be observed. Concerning the guinea-pig test, from a rather large experience we have learned that if we inject into the peritoneal cavity of a guinea-pig more than a few tubercle bacilli, that pig will develop tuberculosis. I think that the guinea-pig should not pass out of the picture in the diagnosis of renal tuberculosis. Dr. Lowsley spoke of nephrectomy. We do not do a nephrectomy unless we are sure that the patient has a destructive lesion of tuberculosis which may be demonstrated with the pyelogram. The functional test has not assisted us greatly, as we have repeatedly found kidneys with normal function and destructive lesions which eliminate pus and tubercle bacilli.

DR. STANLEY L. WANG, New York: The procedure that I described is, of course, subject to the shortcomings of dispensary treatment. For that reason it seemed best to adhere to the small dosage of tuberculin. Some years ago I had the experience of treating a large number of ambulatory patients with pulmonary tuberculosis, and I found that after tuberculin has been administered with the idea of producing reactions, one becomes careful of it. We have used only the smaller doses. Our patients are carefully studied as to whether there is any evidence of active pulmonary disease, and if it is present they are at once transferred to a tuberculosis sanatorium. They are all afrebrile and are not discharged from the hospital until the temperature has dropped to practically normal. If patients have fever they are kept in bed and tuberculin is not given. I think it may be said that the treatment is practically confined to the afebrile type.

RADIATION SERVICE IN THE MODERN HOSPITAL *

ALBERT SOILAND, M.D.
AND
ORVILLE N. MELAND, M.D.
LOS ANGELES

With the passing of the nineteenth century came a distinct change in science and its applications, which had a profound effect on medicine. Although the discoveries of Roentgen and the Curies were purely physical, the practical side of their work has been largely medical, affording not only diagnostic but also therapeutic aid. So general has the acceptance of this aid been that there is now a distinct branch of medicine devoted to radiant energy under the caption of radiology. It is only natural that in the entering of new fields many disappointments and failures should have resulted. These have come from faulty technic interpretation or application; nevertheless, improvement has steadily taken place, so that we now have a more definite idea as to the place x-rays and radium should occupy in our diagnostic and therapeutic armamentarium. In modern hospitals there has been an endeavor to increase radiologic efficiency, and it is to this phase that we shall confine ourselves in this article.

Radiation service might be discussed from both a diagnostic and a therapeutic standpoint, but so much has already been written about the diagnostic side that we shall omit this from the present discussion. Physicians have accepted the x-rays as a necessary adjunct in seeking the cause of certain symptoms, but they have not been fully informed as to the accomplishments of irradiation in the various ills to which man is disposed. We shall therefore discuss the subject briefly from this standpoint.

To render first class radiologic service, it is essential to have the best of equipment. This does not mean that it must be the latest. There are several x-ray companies turning out very good pieces of apparatus which may differ in a few minor respects, but for practical purposes there is little to recommend one type over another. Of late, European manufacturers have instituted radical changes through the use of tube or Kenetron rectification in place of the cross arm rectifier which, with its cleanliness and silence, seems to lead us to its use, but with it come increased dangers because of this very silence. Physical measurements indicate that for the lower voltages no marked differences exist; still when we consider machines running at high voltages, the constant potential obtained through tube rectification is apparently superior.

The amount of equipment necessary for therapy will depend on the institution, its size, and the kind of work that comes up. In smaller places the same x-ray machines used for diagnosis may also serve for the low and moderate voltage therapy. On the other hand, if a great deal of treatment is done, a separate department with its own equipment is essential for the best results. In deep seated malignant growths, it is neces-

* Read before the Section on Radiology at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

sary to have a machine capable of delivering high voltages. Undoubtedly a great number of diseases, including the superficial malignant conditions, can be and are satisfactorily treated by moderate voltages, but for the best effects it is requisite to have the larger equipment to give the patient the treatment which modern medical art has evolved.

Should the department of radiology be equipped with radium? This is a difficult question to answer without considerable thought, but if the radiologist or his associate, who is the head of the therapeutic section, does an abundance of therapy and is himself to handle a majority of the patients with malignant conditions, the answer is yes; otherwise no. The radiologist who is engaged in diagnosis as well as in treatment sooner or later inclines one way or the other; if he is interested in diagnosis, the treatment suffers, since the problems encountered are distinctly different. Many institutions have too small an amount of radium to give efficient service. Frequently it is loaned out by the hospital or the radiologist to the various members of the staff who have had no practical experience with its use, and when failure results the radium rather than the operator is at fault. Though much good can be done with 50 mg., especially in malignant conditions of the uterus and superficial skin growths, it is hardly enough for the large hospital where enough radium for packs is frequently in demand. Here it is better to rely on the x-rays. We realize that the gamma rays are superior to the hardest x-rays but, taken all in all, it is better to have good irradiation from an x-ray plant than to have inadequate radium therapy from an insufficient amount of radium or that obtained from radium in the hands of the inexperienced.

In most institutions the diagnostic and therapeutic sections of the radiologic department are conducted as one. In the smaller hospitals, where the work is limited, it will of course be necessary to have the two sections combined for economic reasons. On the other hand, where there is much to do, the departments should be separate and distinct, since one or the other will suffer. Most of the consulting work is diagnostic; consequently, diagnosis is developed to the exclusion of the therapy. When the radiologist is doing diagnostic work for a number of surgeons, he sometimes fails to enlighten them with reference to the benefit of radiation therapy in order not to antagonize them by pushing his own wares. For this reason, we feel that the problems arising in connection with therapy are distinct and separate, and should have an active head interested in this phase alone.

Finally, what are the functions of the radiologist himself? Has he done his duty to patient and hospital in rendering technical service alone? To the patient, yes; but to the staff, no. He has charge of agents which are very potent and concerning which he must and should keep his colleagues informed. To most physicians and patients the mention of x-ray and radium treatment is synonymous with malignancy. It is true that these agents have won their spurs in this field, but it is equally true that they are as efficient in many benign conditions.

For many years postoperative irradiation has been used in cancer of the breast, but do we know just how much the final results are enhanced? Are the results better by this additional treatment than by surgery alone? We may feel so, but does the surgeon? On the other hand, we have carried out a preoperative radiation technic in cancer of the breast for a great many years and have repeatedly urged its use for this purpose before medical societies. The recent publications from the Memorial Hospital by Burton Lee,[1] on cancer of the breast, have prompted us again to stress the advisability of routine preoperative irradiation. We know the results of surgery alone; we also know what postoperative irradiation has done; but have we done our duty until we know what preoperative irradiation will do? So great a man as Handley [2] says that irradiation will kill the cancer cell in the breast, but he is unable to say just how much it does accomplish. He feels that it may be of immense benefit in that realm of uncertain boundaries which he calls the "growing edge," and when surgery is instituted later there will be less chance for implantations. In cancers of the cervix uteri and the lip, however, definite figures show that irradiation stands on a par with surgery.

With regard to the inflammations, how many physicians are aware of the beneficial effects of roentgen irradiation in pyogenic inflammatory conditions? Dermatologists make use of it in acne vulgaris, but does the general practitioner know of its use in paronychia, carbuncles and abscesses? Many a chronic sinus has been cleared up by a treatment or two, and even in deep seated infections of the pelvic organs we can vouch for its value, while in such a dangerous complication as postoperative pneumonia, Fried and Heidenhain [3] have used soft x-rays with excellent results. More recently, the value of x-rays in erysipelas has been brought out by Lawson [4] and by Platou.[5] The course of the disease is shortened and complications are lessened, but how often are they used? In the field of pulmonary disease, irradiation over the spleen and lungs has given relief in asthma; so too in bronchiectasis we have found that a course of roentgen therapy has at times benefited the patient more than anything except an extensive thoracoplasty. Neuritis and arthritis, two most stubborn conditions in which elimination of foci of infection has not always been attended with success, are frequently relieved. Patients suffering for months are sometimes much improved by roentgen irradiation when everything else except opiates has failed. We have seen sciatica and trifacial neuralgia disappear under irradiation.

In the endocrine system, whose disorders present so varied a clinical picture, irradiation offers much. Its use in toxic goiter is well known; likewise, in the ovarian conditions associated with developmental dysfunctions of menstruation and reproduction, radiation therapy is opening up a field that substitution glandular therapy cannot always reach. Exposure of the pituitary body and the ovaries to small doses for menstrual disturbances is almost specific, while increasing the dose to the ovary will result in an amenorrhea with disappearance of fibroids.

We could go on and mention many other conditions in which radiation will help the patient. There is hardly a specialty in which it cannot be used without benefit. Granting that the radiologist has the training and experience, he is then one of the keymen in medicine today and, as such, he should keep his associates informed as to the possibilities in his particular line.

1. Lee, Burton: Therapeutic Value of Irradiation in the Treatment of Mammary Cancer, Ann. Surg. **88:** 26 (July) 1928.
2. Handley, W. S.: Radiation from a Surgeon's Standpoint, Brit. J. Radiol. **2:** 50 (Feb.) 1929.
3. Fried and Heidenhain: Roentgen Irradiation of Acute and Subacute Inflammations, Acta radiol. **9:** 109, 1928.
4. Lawson, J. D., and Harbinson, J. E.: Treatment of Erysipelas by Roentgen Ray, California & West. Med. **26:** 485 (April) 1927.
5. Platou, E. S., and Rigler, Leo: Roentgen-Ray Therapy in Erysipelas, Arch. Int. Med. **38:** 573 (Nov. 15) 1926.

The qualifications of a good therapeutic radiologist require a thorough grounding in the fundamentals of medicine, anatomy, physiology and pathology. He should have more than the ordinary knowledge of the various malignant diseases, their manifestations and their progress, and he should know the effects of irradiation on tissues in general, but more especially on malignant tissues. If he is engaged in radium therapy as well as in roentgen therapy, he should have a thorough grounding in surgical principles. The application of radium has been largely a medical problem, but with the advent of radon and its introduction in small screened seeds, and the direct surgical exposure of malignant growths for implantation, the problem has become surgical as well as medical.

The field of radiation therapy has become so large that we feel it is distinct and separate from the diagnostic phase. In hospitals, this department cannot fulfill its possibilities unless it is run by one especially interested along these lines, nor does the radiologist render the most to hospital, patient and colleague unless he keeps his associates informed as to the progress and accomplishments in the various fields of endeavor.

ABSTRACT OF DISCUSSION

DR. C. J. JOHANNESSON, Walla Walla, Wash.: Drs. Soiland and Meland have covered the subject so well that I can add little from my limited experience. I regret that a paper of this character could not be brought before a group of physicians in the general practice of medicine and surgery instead of men limited in their work, because most of us are familiar with various phases of roentgen therapy, while the surgeon and internist are less so. Therefore, I feel that we should encourage more friendship and more thorough understanding and cooperation between the men in general practice and the roentgenologist. We should talk to them, not instruct or command them, in urging them to have roentgen therapy carried out in their patients. We should try to get them to see the practical side of the situation. The physician understands that the roentgenologist usually cares for incurable malignant growths. In reality we have an enormous field in all the superficial work that they do not think about in connection with roentgen therapy, which covers a much more important territory. The authors have brought out that a radium department should be connected with hospitals, but I feel first that the radiologic department in any hospital should always be in the hands of a competent radiologist. We have throughout the country in various places large hospitals where the roentgen department is not in the hands of a radiologist. Sometimes the local physicians interpret the plates or they give some kind of therapy, whatever it may be, in some of the private institutions where they are doing the work, eliminating completely the services of a radiologist. But I know of standardized hospitals that are not having a radiologist or any man who is trained in roentgen therapy or diagnostic work in charge of the roentgen department. Why, I do not know, and why standardization allows conditions of such a character, I cannot explain, but I feel that the roentgen societies should work hand in hand with men interested in standardization to stop conditions of such a nature. Another thing, brought out by Dr. Chamberlain some time ago, is that some hospitals are employing physicians on a salary basis and are accepting patients for roentgen examinations and making diagnoses, the hospitals collecting for it. That is another side that should not be permitted. In regard to epithelioma of the lower lip and roentgen therapy, I have had very little success and quite a number of failures in treating the lower lip exclusively with x-rays. If it is a mistake on my part, I should like to know. I have obtained the best and most satisfactory results by first removing the epithelioma of the lower lip by electrocoagulation, followed by roentgen-ray or radium irradiation over the lymph gland distribution of the neck and inferior mandible.

DR. H. B. THOMPSON, Seattle: Drs. Soiland and Meland failed to mention one feature of the roentgen work in the hospital which I think is very important and which may have as much to do with efficiency in the laboratory as the presence or absence of certain equipment, namely, the business relationship with the hospital. Dr. Johannesson brought this out to some extent. I think that the hospital is entitled to enough money to cover the interest on the money invested, and to cover a reasonable rental for the room, and the space occupied by the department, but further than that I do not think they should expect to get anything out of the roentgen laboratory. Any arrangement which they may make with the radiologic department which gives them more of the income of the department than is covered by the items I mentioned is practically a rebate by the radiologist, or, in the worst form, the practice of medicine by the hospital. In its worst form, it is practiced by hospitals which employ a nonmedical man to run the department and take all the profits which may be derived; but any arrangement by the radiologist whereby he gives up a certain part of his recognized commission or salary above the actual expenses to the hospital is one form of rebate, and I do not think it should be tolerated. The hospital, of course, is bound to benefit from the operation of the roentgen-ray department, and that is all that they should be expected to get from that source. If a hospital can operate an efficient roentgen-ray department without expense to itself, that is all it should expect from the department.

DR. ALBERT SOILAND, Los Angeles: Dr. Meland and I discussed whether or not we should attempt to bring up this economic subject, and we decided that that would be trying to do too much for the first time. We agree with what Dr. Thompson has said; in fact, in Los Angeles we have succeeded in inducing the high grade hospitals to live up to that standard which we have demanded of them.

GENERALIZED MELANOSIS

REPORT OF CASE, WITH NECROPSY *

STUART C. WAY, M.D.
AND
S. E. LIGHT, M.D.
SAN FRANCISCO

According to Dawson,[1] the malignant melanomas which have an origin in a benign pigmented nevus arise from two sources: (1) from a proliferation of the original nevus cells embedded in the corium and (2) from the cells of the surface epithelium and its interpapillary epithelial processes by a series of transformations analogous to those traced in the genesis of a simple nevus.

Those of intra-ocular origin are said to arise in the pigmented cells of the choroid, ciliary processes, iris or cornea at the line of the palpebral fissure. They raise the most difficult aspects of the problem of histogenesis, for while the cutaneous melanomas may in many instances be traced directly to an epidermal origin, it is only the conjunctival pigmented nevi which can be thus traced, and the tumors arising from any part of the uveal tract are held by the great majority of observers to be mesoblastic in origin in virtue of the mesoblastic origin of the choroid and therefore of the pigmented cells which surround the choroidal sinuses.

REPORT OF CASE

History.—Mrs. L. M., aged 66, American, was examined, April 10, because of an eruption involving the entire body. She gave a history of pneumonia, arthritis, sciatica, pulmonary hemorrhage twice, varicose veins, leg ulcers, frequent headaches, epistaxis and, during the menopause, frequent fainting spells. Both parents had died of yellow fever. The patient had been

* From the clinic of Dr. Harry E. Alderson, Department of Dermatology, Stanford University School of Medicine.

1. Dawson, J. W.: The Melanomata, Their Morphology and Histogenesis, Edinburgh M. J. **32**: 705 (Oct.) 1925.

married twice; the first husband died of stomach trouble and the second one had a severe nephritis. She had six children living and well.

The patient complained chiefly of an eruption covering nearly the entire body, loss of appetite, a severe cough, general weakness, loss of weight (from 20 to 30 Kg.) and an intensely itching and hypersensitive skin. The condition had its onset during July, 1928, when a few black, pigmented spots were noticed about the head. One month later the patient was found in bed unconscious and almost completely covered with a profuse spotted eruption which was diagnosed at that time by the family physician and later by many others as purpura. She was taken to a hospital and given a blood transfusion because of the secondary anemia. There was a marked improvement within three weeks, at which time she was able to leave the hospital. However, the eruption, which was accompanied by unbearable periods of itching, persisted. During the next six months, although the general condition remained the same, the individual lesions increased slowly in size and were more deeply pigmented.

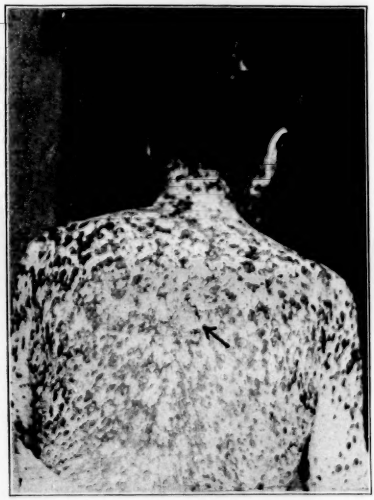

Fig. 1.—Generalized melanosis. The site of the primary lesion is indicated by the arrow.

Physical Examination.—The skin was found to be deeply pigmented, with various sized macules, papules and nodules which covered practically the entire body. These lesions were present by the hundreds on the face, arms, legs, chest, back, buttocks, palms of the hands, soles of the feet, nail beds, ears, conjunctiva of the eye, eyelids, cheek, palate, tongue and the various mucous membranes.

There was a cerebelliform, pigmented mole on the patient's back about 3.5 cm. in diameter which was probably the primary lesion. This nevus had formerly been much smaller and had been present for many years. Moist râles were heard at the base of both lungs, and patches of impaired resonance were noted.

The extremities showed a marked wasting, the skin lying in loose folds. There was a varicose ulcer in the right leg. The right inguinal nodes were large and firm, tender on palpation, discrete but not freely movable. The left inguinal, axillary, supraclavicular and cervical nodes were all palpably enlarged. The temperature was normal, the blood pressure 165 systolic and 80 diastolic, and the pulse 80.

Laboratory Examination.—The blood Wassermann reaction was negative. The hemoglobin was 60 per cent; the erythrocytes numbered 3,600,000 and the leukocytes 4,000, with a differential cell count of polymorphonuclears 77 per cent, lymphocytes 15 per cent, transitionals 7 per cent and eosinophils 1 per cent. The urine contained melanin in large quantities.

Fig. 2.—Pigmented stripe in the nail bed. Note other evidence of metastasis.

An elevated, pigmented nodule was removed from the anterior surface of the right leg near the ankle. Microscopic examination of the sections disclosed that they were from a secondary, metastatic nodule; they were stained with hematoxylin-eosin.

Fig. 3.—Metastasis into the conjunctiva

The stratum of the epidermis was thickened and many of the squamous cells showed a perinuclear vacuolization. A few of the interpapillary processes had disappeared. Some of the epidermal cells next to the corium showed an increased pigment content. Most noticeable, however, was the thinning of the epidermis.

The malignant cells comprising a part of and infiltrating the corium displayed an extraordinary polymorphism and the prickles or protoplastic bindings, so characteristic of epithelial cells, were entirely lost.

Many of the cells were deeply pigmented to the tips of their finely branching processes; in fact, so pigmented that often only a nucleus was visible. Some of the more mature cells had ruptured, scattering free pigment about.

The free pigmented cells were proliferating rapidly, at the same time retaining their polymorphism and long processes, and under high power many of them looked exactly like what they probably were—enlarged cells of the deeper layers of the epidermis which had become ameboid. As these rapidly proliferating cells reached the deeper layers of the corium, they arranged themselves in the dilated tissue spaces in an areolar manner, morphologically resembling an acinose tumor. Noticeable was the lessening of the pigmentation as the deeper layers were reached, for the young cells had not yet gained the power of producing pigment.

Pigmented, branching or rounded cells with globular pigment masses might be seen even in the deeper layers within the fibrous tissue septums, but these could be recognized as phagocytic cells which had been carried by the lymphatics from the upper portion of the tumor.

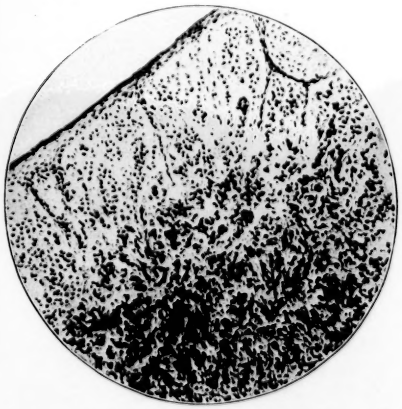

Fig. 4.—Section from a metastatic nodule showing thinning of the epidermis. The corium is heavily infiltrated with rapidly proliferating cells.

Lymphocytes, plasma cells and mast cells occurred with varying frequency throughout and characterized the process as one of a chronic inflammatory type. Morphologically, the sections resembled a metastatic, melanotic epithelial tumor of more than moderate malignancy.

Autopsy Observations.—The autopsy was performed by Dr. William Ophuls and Dr. E. M. Butt. The body was of a medium size, fairly well developed but poorly nourished. It had been enbalmed. The pupils were moderately but unequally dilated. In the conjunctiva were a few brownish black spots and about the periphery of the iris were curved linear deposits of the same brownish black pigment. A few pigmented spots were seen in the mucous membranes of the mouth and on the tip of the tongue.

Covering practically the entire body were hundreds of brownish black nodules and macules. In some areas, especially over the back and lower third of the legs anteriorly, the lesions were confluent. In the latter places, the pigmented areas were nodular and small tumors projected from 2 to 5 mm. above the surface of the body.

Over the neck and upper extremities, the pigmented areas were fewer than elsewhere but still were quite numerous.

There were hard, moderately enlarged lymph nodes in the axillary and inguinal regions about the size of kidney beans. In the external auditory meatus and about the external ear were numerous similarly pigmented nodules and papules.

Beneath the nails of many of the fingers and toes were small pigmented stripes. Additional pigmented spots are found in the vagina and covering the labia.

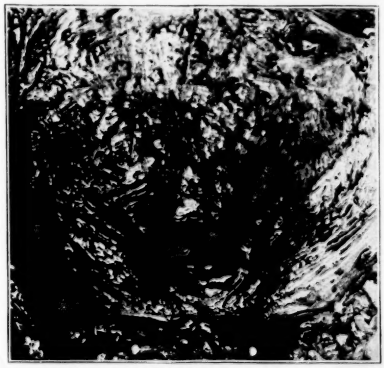

Fig. 5.—Metastatic, pigmented nodules in the bladder mucosa.

The omentum was small, contained a moderate amount of fat, and was speckled with small pigmented areas. There were numerous small pigmented tumor masses in the mesentery and in several places in the peritoneum covering the bowel.

The right pleural cavity was obliterated by firm fibrous adhesions. The heart was of about normal size. The pericardium was smooth and moist. Within the pericardium were a few tiny pigmented areas.

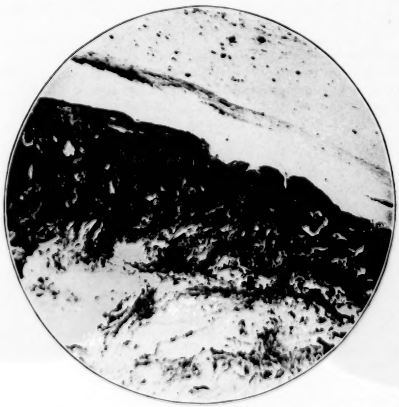

Fig. 6.—Pigmented stripe in nail bed. Pigment granules may be seen within the nail substance. Low power magnification.

The pleura of the left lung was covered with numerous brownish plaques. Throughout the lung were a few confluent solid areas of carbon pigmentation and fibrosis. The peribronchial lymph nodes were small and deeply pigmented with carbon and contained a few small grayish white areas.

In the anterior mediastinum were numerous small pigmented plaques. There was quite a marked fibrous thickening of the

pleura of the right lung. The cut surface was similar to the left. There were numerous solid pigmented areas in the upper lobe and fewer in the lower.

The left suprarenal contained a few small pigmented tumor masses in the capsule. Similar pigmented tumor masses were present in the right suprarenal.

The left kidney measured 11 by 5 by 4 cm. Within the capsule, which stripped easily, were some small pigmented spots. The surface contained a few deep scars and was reddish brown.

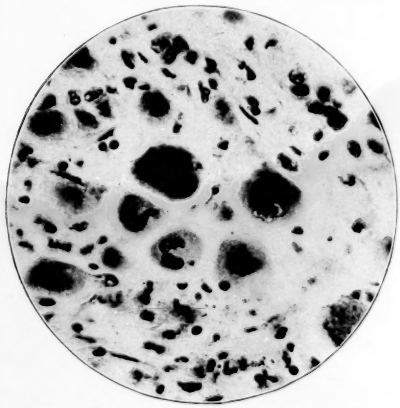

Fig. 7.—Type of multinucleated cell found in the corium.

There were some very tiny black spots in the cortex and pelvis. The right kidney was the same as the left.

The mucosa of the bladder was covered with small pigmented areas averaging from 2 to 4 mm. in diameter.

The peritoneum covering the uterus contained numerous moderate sized pigmented areas.

The retroperitoneal lymph nodes were enlarged, firm and quite heavily pigmented. The largest had a long diameter of 2.5 cm. At the brim of the pelvis on the right was a large lymph node, deeply pigmented and about the size of a lime.

The mucosa of the appendix contained a couple of small pigmented areas and the mucosa of the large bowel showed similar areas.

The remaining organs failed to show metastases.

The anatomic diagnosis was: (1) nevus pigmentosus; (2) melanoma of the skin; (3) melanoma, metastatic of the skin, lungs, heart, pleura, peribronchial and retroperitoneal lymph nodes, peritoneum, omentum, suprarenal, bladder, intestine and eye; (4) arteriosclerosis; (5) pigmentation of the spleen and kidneys; (6) anemia, secondary; (7) chronic adhesive pleurisy, and (8) fatty liver.

Histologic examination of the kidney showed large amounts of brown granular pigment in the tubular epithelium, with smaller amounts in the convoluted portions than in the other parts of the tubular tracts. There were a few small scars in the cortex. An occasional glomerulus was obliterated by fibrosis and hyaline degeneration. Marked congestion was present throughout.

The suprarenal contained a large amount of lipoid material. Another section showed a small tumor mass in the cortex, with cells similar to those already described. Many of these cells contained pigment.

A few small tumor nodules composed of large atypical cells similar to the tumor cells described elsewhere were present in the pancreas. The cells contained scarcely any pigment and the fibrous tissue stroma was very delicate. Some fatty changes were seen in the cells of the islands of Langerhans.

The spleen was markedly congested. The small arteries showed considerable thickening and hyaline degeneration. Small amounts of pigment existed in the phagocytic cells. Tumor cells were not seen.

The retroperitoneal lymph node showed small clusters of large spherical and polygonal cells, closely resembling epithelial cells surrounded by moderate amounts of fibrous tissue. Some of the cells had two or more nuclei. A few of the cells were heavily laden with brown granular pigment, while most of the tumor cells were free from pigment. A few of the fibroblasts of the fibrous tissue stroma contained moderate amounts of pigment. Here and there were small remnants of lymphoid tissue.

The heart showed a moderate increase of perivascular fibrous tissue and a few fibrous tissue scars. On the pericardium and extending into the heart muscle was a small metastatic tumor nodule composed of large atypical cells, of which a very few contained pigment.

In the lung tissue were numerous quite large areas composed of large atypical cells similar to those described in the lymph node. Most of the tumor cells contained a large amount of brown granular pigment. Scattered throughout were small amounts of black coal pigment in small areas of fibrosis. The few air spaces seen in the section were quite large and the septums were quite thin, except in the places of tumor infiltration.

COMMENT

The primary lesion in all probability began in a pigmented nevus located on the back of the patient. This had been present for many years and because of its elevated position was subject to constant irritation.

The first evidence of metastasis appeared on the scalp, in about three or four minute lesions; however, little thought was given to them. More interesting was the occurrence of a shower of metastatic lesions which involved practically the entire body and so closely simulated purpura hemorrhagica that it was diagnosed as such by numerous physicians. The purplish red of the

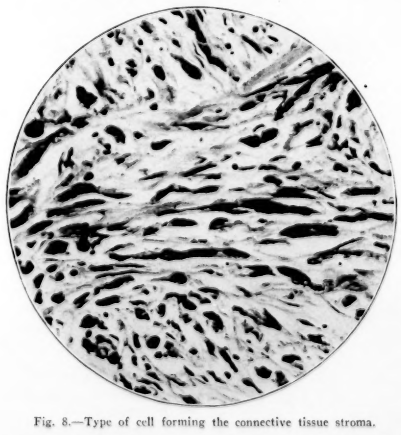

Fig. 8.—Type of cell forming the connective tissue stroma.

eruption, present at its onset, slowly changed to a dark brown or black.

Processes involved in extensive metastases are subject to variation. It seems improbable that the method of dissemination remains constant and does not vary with the condition of the patient. Handley[2] believes that the master process of general dissemination

2. Handley: Prophylaxis of Breast Cancer, Practitioner **84**: 463-475, 1910.

in cancer is lymphatic permeation. Ewing [3] remarks that entry into the veins is accomplished through the defective vessels within the tumor, by invasion and rupture of adjoining vessels, or by infiltration along the vasa vasorum and intima with gradual erosion of the wall. Carcinoma often penetrates the wall by way of the perivascular lymphatics.

The result of such invasion is at first a thrombosis, complete or partial, at the point of entry. The tumor cells may then be destroyed by organization and fibrosis of the thrombus with subsequent canalization,[4] or the cells may continue to grow within the vein; they become attached to the wall and produce flat or polypoid outgrowths, and many cells or cell masses become detached from the wall or from the original tumor and are carried to the first zone of capillary vessels, usually the lungs, where they lodge as emboli, either perishing or developing into secondary metastatic tumors. Ewing [5] says that it has been frequently demonstrated that tissues and tumor cells pass through the pulmonary capillaries, and

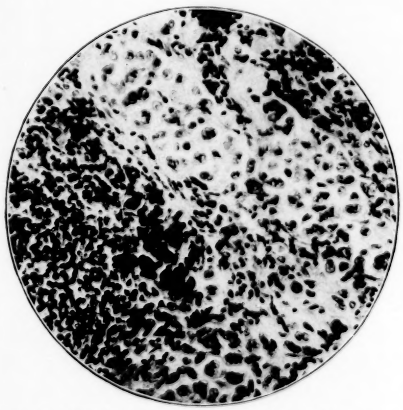

Fig. 9.—Metatasis into one of the lymph nodes. A large amount of pigment may be seen in the center of the picture.

in certain tumors general metastases develop in this way. Emboli are exposed to destructive agencies and may perish, but more often they develop into secondary tumors.

The direct transportation of emboli from continuous growth in the veins is by far the most important mode of dissemination in blood vessels, and in this case it is difficult to explain this sudden shower by any other method.

Practically the entire body was involved; even the mucous membranes failed to escaped. The right eye showed an irregular, deeply pigmented lesion located in the conjunctiva, close to and partly surrounding the cornea. An unusual pigmented stripe was present in several of the nail beds, which had the same appearance microscopically as the skin lesions. The intense pruritus which the patient complained of may have been due to the metastatic, malignant lesions, but a senile type of pruritus must not be overlooked.

3. Ewing: Neoplastic Diseases, Philadelphia, W. B. Saunders Company, 1928, p. 82.
4. Schmidt: Die Verbreitungswege des Carcinoms, Jena, 1903.
5. Ewing: Neoplastic Diseases, p. 85.

The melanuria in this case may be attributed to the excretion of pigment granules or the passage of pigmented tumor cells through the glomeruli.

Pigment may appear in the urine as pigment or in a modified form as melanogen, which darkens on exposure to air or by the addition of oxidizing substances. Accompanying the visceral metastases may be found a diffuse staining of the endothelial cells of the blood vessels and of the serous membranes, such as may be present in Addison's disease. A diffuse pigmentation also of the whole of the tissues and the organs of the body has, in rare cases, been described. In our case such a pigmentation occurred in the spleen and kidneys.

Melanuria in man has been regarded as pathognomonic of the existence of a melanoma, but Peters [6] and also Haden and Orr [7] have reported cases of melanuria in the absence of such tumors. Peters' patient was a boy with hepatic cirrhosis.

The rapid onset of the condition in our case and its early appearance, resembling that of purpura hemorrhagica, are of diagnostic interest. Such extensive metastases as occurred in this case are rarely seen. The production of pigmented stripes in the nail beds by metastases is unusual.

490 Post Street.

6. Peters, J. P.: Melanuria Without Melanosarcoma, Arch. Int. Med. **32**: 709 (Nov.) 1923.
7. Haden, R. L., and Orr, T. G.: Melanuria in the Abscence of Melanotic Tumor, Bull. Johns Hopkins Hosp. **35**: 58 (Feb.) 1924.

GENERALIZED PRESSURE ATROPHY OF THE BRAIN

SECONDARY TO TRAUMATIC AND PATHOLOGIC INVOLVEMENT OF PACCHIONIAN BODIES *

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The frequency with which cerebral trauma is followed by a definite group of vague and widespread symptoms has prompted a closer study of the problem.

It is not difficult to understand how a severe blow on the left side of the skull may leave a patient partially paralyzed with disturbance of speech and an associated mental deficiency. Mechanisms producing this effect may vary, but the neurologic observations indicate an organic disturbance of the motor elements, and a widespread involvement of other centers may be assumed.

It has not been clear why such a definite proportion of patients receiving relatively mild cerebral injuries develop after their recovery intermittent headaches, irritability and loss of concentration, memory, judgment and ambition, some of them later developing convulsive disorders. They complain of dulness, depression, vertigo and nervousness, and there is usually noted a definite change in personality. In this type of patient, neurologic examinations reveal little if any evidence of objective character, and hence the patients are diagnosed as exhibiting post-traumatic neurosis, hysteria, neurasthenia and even malingering.

The problem under consideration has a definite economic, medicolegal and therapeutic aspect. Viewed

* Read before the Section on Surgery, General and Abdominal, at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 12, 1929.

* From the Departments of Neurology and Roentgenology, and the Daniel J. McCarthy and Memorial Foundations of the University of Pennsylvania School of Medicine.

* This article is abbreviated in THE JOURNAL by the omission of some of the illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

in the light of more recent diagnostic methods, this type of patient has a characteristic and demonstrable cerebral disorder which may exist even without definite neurologic signs.

Because most of the accident cases, including those of cerebral trauma, are usually first under the care of the surgeon, the management and prevention of these sequelae should be of prime interest to him. The recovery as well as the future symptoms of the individual frequently depends on the treatment and handling of the patient during the first seventy-two hours. It is within this stormy period that usually one is concerned only with the factors related to the patient's survival, allowing the future to take care of itself; but it is of almost equal importance to consider the need of returning that patient to a sound mental and economic status, if possible.

Since the introduction of encephalography by Dandy[1] in 1919, a large number of post-traumatic cases, including birth injuries, symptomatic and idiopathic epilepsies and mental deficiencies, have been analyzed. In my series of 112 encephalograms, the major portion are made up of this group. The almost constant location of the pathologic changes in the frontal and parietal regions has required a search for the underlying factors concerned in this mechanism.

Encephalography consists in the securing of proper roentgenograms of the head after cerebrospinal fluid has been withdrawn from the lumbar sac and replaced by air. With proper technic it is possible thus to visualize the surfaces of the brain, by means of the stereoscope, almost as though the structure itself had been removed from the skull for inspection.

This method has revealed extensive cerebral atrophy in the absence of neurologic signs, and often when few subjective symptoms were present. The degree of cerebral atrophy noted has frequently been out of all proportion to the severity or location of the injury. It

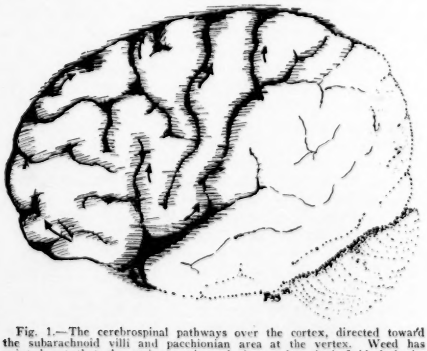

Fig. 1.—The cerebrospinal pathways over the cortex, directed toward the subarachnoid villi and pacchionian area at the vertex. Weed has pointed out that the major portion of the cerebrospinal fluid finds its escape in this area by filtration into the large venous sinuses.

is almost identical with the atrophies that are found in cases of meningitis, cerebritis, birth hemorrhage and mental deficiency of idiopathic origin. Though the atrophy throughout these states is similar, the degree and extent depend on the duration and the age of onset. The patient's symptoms are also dependent on this factor as well.

1. Dandy, W. E.: Roentgenography of the Brain After the Injection of Air into the Spinal Canal, Ann. Surg. **70**: 397-403 (Oct.) 1919.

Weed[2] demonstrated the most important structures concerned in the elimination of cerebrospinal fluid to be the subarachnoid villi and pacchionian bodies. In adult life there are usually six principal collections of these structures situated at the vertex, close to the superior longitudinal sinus. Other groups exist scattered throughout the craniovertebral cavity.

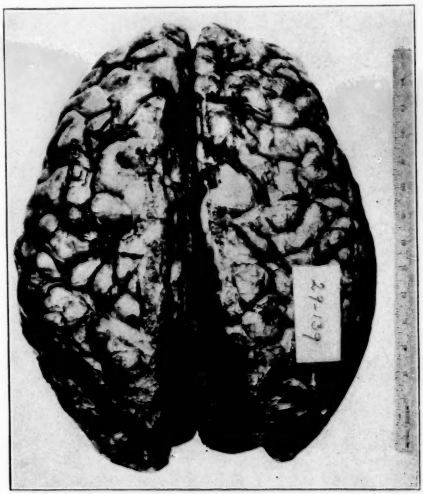

Fig. 2.—Normal brain showing a large number of pacchionian granulations, situated at the vertex close to the median line. The dura and falx have been carefully removed. (Preparation by Dr. N. W. Winkelman.)

The importance of these structures is evident, if the function attributed to them is correct. Improper development, disease or injury would greatly affect the rate of cerebrospinal fluid elimination from over the surface of the brain.

Weed[3] pointed out in 1920 that the cells of the arachnoid reacted violently to whole and washed red blood cells. Bagley[4] showed proliferation of the arachnoid and reaction to red blood cells introduced into the cisterna magna of dogs. There were marked changes produced over the motor areas of the cortex from this procedure.

Winkelman[5] has shown definite pathologic changes in the pacchionian bodies following trauma, subarach-

2. Weed, L. H., and Wegeforth, Paul: Experimental Irrigation of the Subarachnoid Space, J. Pharmacol & Exper. Therap. **13**: 317-334 (July) 1919. Weed, L. H., and McKibben, P. S.: Pressure Changes in the Cerebrospinal Fluid Following Intravenous Injection of Solutions of Various Concentrations, Am. J. Physiol. **48**: 512-530 (May) 1919; Experimental Alteration of Brain Bulk, ibid. **48**: 531-558 (May) 1919. Weed, L. H., and Hughson, W.: Intracranial Venous Pressure and Cerebrospinal Fluid Pressure as Affected by the Intravenous Injections of Solutions of Various Concentrations, ibid. **58**: 101-130 (Nov.) 1921; The Cerebrospinal Fluid in Relation to the Bony Encasement of the Central Nervous System as a Rigid Container, ibid. **58**: 85-109 (Nov.) 1921. Weed, L. H.: Experimental Studies of Intracranial Pressure, Association for Research in Nervous and Mental Diseases, Dec. 28, 1927; The Cerebrospinal Fluid, Physiol. Rev. **2**: 171-203 (April) 1922.

3. Weed, L. H.: The Cells of the Arachnoid, Bull. Johns Hopkins Hosp. **31**: 343-350 (Oct.) 1920.

4. Bagley, Charles: Blood in the Cerebrospinal Fluid: Resultant Functional and Organic Alterations in the Central Nervous System, Arch. Surg. **17**: 18-81 (July) 1928.

5. Winkelman, N. W., and Fay, Temple: The Histology and Pathology of the Pacchionian System, with Particular Reference to the Idiopathic and Symptomatic Convulsive State, read before the fifty-fifth annual meeting of the American Neurological Association, Atlantic City, N. J., May 27, 1929.

noid hemorrhage, meningitis, eclampsia, uremia and senility.

Pancoast and I [6] have presented roentgenographic evidence from encephalographic studies establishing the cerebrospinal fluid circulating field over the cortex as in the frontoparietal areas of the brain.

I [7] have pointed out the significance of the fluid increase seen in the post-traumatic and idiopathic epilepsies in relation to the effect on convulsive seizures.

Recently, Winkelman and I [8] pointed out that the cerebral atrophy seen in the post-traumatic cases studied corresponded to the cortical cerebrospinal fluid circulating field (frontoparietal areas), and that this atrophy was of an ischemic type, similar to the pressure atrophy of the brain described by Hassin.[9]

The extent and location of this cortical atrophy can be accurately shown by encephalography in the post-traumatic patient if roentgenograms are taken according

Fig. 3.—A normal encephalogram. Air is seen in the fine fluid spaces surrounding the convolutions. Note the normal size and distribution of the pathways over the frontoparietal area. The lateral ventricles are clearly shown, even the descending horns. Air is also seen in the cisterna chiasmatis and the cisterna magna. The spinal cord may be vaguely seen in the upper cervical area.

to the technic devised by Pendergrass,[10] and if the interpretation is based on the studies of Pancoast and myself.

It is my opinion that cerebral trauma, associated with bloody spinal fluid (subarachnoid hemorrhage), is responsible for temporary as well as permanent inury to the pacchionian bodies, as shown by the neuropathologic studies of Winkelman, the acute reactive changes being due to the presence of red blood cells, as demonstrated by Weed and Bagley. The resultant delay in the escape of cerebrospinal fluid consequent on this injury may produce overfilling of the subarachnoid channels over the frontoparietal area and supracortical increase in pressure, favoring a relative ischemia and progressive cortical atrophy. The facts supporting this view and the reasons for its adoption are taken up in detail in the articles referred to.

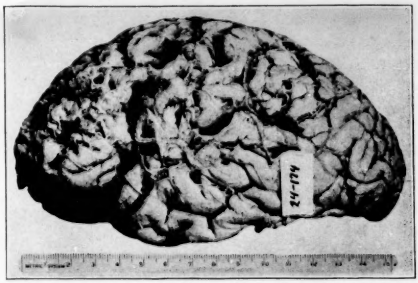

Fig. 9.—Brain of a patient with idiopathic epilepsy and mental deficiency. Note the area of atrophy confined to the cerebrospinal fluid circulating field in the frontoparietal area. Attention is called to the escape of the temporal and occipital lobes from this process and also the undersurface of the frontal lobe. The thickened arachnoid has been opened in various places to show the deep widened fluid channels. This atrophy does not correspond to any one or more vascular plans, but does correspond exactly to the cerebrospinal fluid circulating field. Neuropathologic sections taken from different areas show normal brain structure and elements in the occipitotemporal portions. Studies of the frontoparietal area show pressure atrophy of the ischemic type. (Preparation by Dr. N. W. Winkelman.)

For the purpose of this paper I will call attention to the effects which I believe may follow free bleeding in

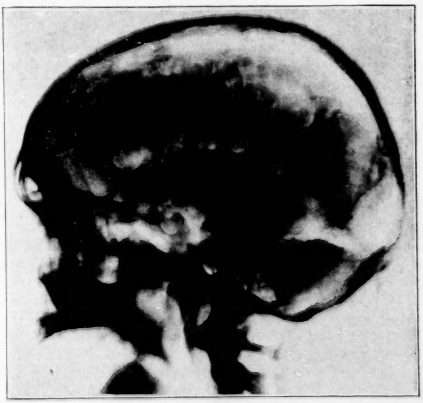

Fig. 10.—Widespread pressure atrophy over the frontoparietal area, occurring fifteen years after severe cerebral trauma. Note the "decompression" made by the surgeon at the time of injury, for relief of pressure. The patient had bloody spinal fluid but no demonstrable clot. At the present time there are symptoms of headache, dulness, nervousness and, recently, several convulsive seizures. The patient is maintaining his position as a U. S. postal employee at the present time. There were no objective neurologic signs indicating an organic lesion of the brain.

the subarachnoid space, whether due to birth injury (Sharpe,[11] from 8 to 13 per cent of normal deliveries), cerebral trauma, spinal trauma (including very bloody

6. Pancoast, H. K., and Fay, Temple: Encephalography: Roentgenological and Clinical Consideration for Its Use, Am. J. Roentgenol. **21:** 421-447 (May) 1929.

7. Fay, Temple: Some Factors in the Mechanical Theory of Epilepsy, with Especial Reference to the Influence of Fluid, and Its Control, in the Treatment of Certain Cases, Am. J. Psychiat. **8:** 783-833 (March) 1929.

8. Fay, Temple; and Winkelman, N. W.: Widespread Pressure Atrophy of the Brain, and Its Probable Relation to the Function of the Pacchionian Bodies, and the Cerebrospinal Fluid Circulation, read before the eighty-fifth annual meeting of the American Psychiatric Society, Atlanta, Ga., May 14, 1929.

9. Hassin, G. B.: Changes in the Brain in Increased Intracranial Pressure, Arch. Neurol. & Psychiat. **20:** 1172-1189 (Dec.) 1928.

10. Pendergrass, E. P.: A New Arrangement of the Bucky Diaphragm for Encephalography, Am. J. Roentgenol. **19:** 482-484 (May) 1928.

11. Sharpe, William: Intracranial Hemorrhage in the New-Born, J. A. M. A. **81:** 620-624 (Aug.) 1923.

spinal punctures) or spontaneous or operative subarachnoid hemorrhages.

In traumatic cases in which there are symptoms of headache, vomiting and slight stiffness of the neck, with or without loss of consciousness, a spinal puncture should be done to determine whether the fluid is bloody.

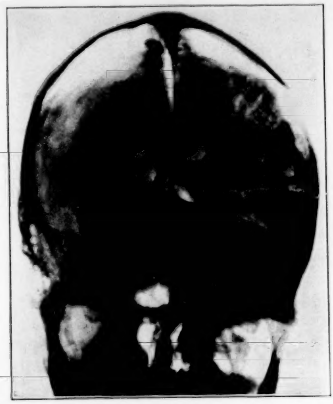

Fig. 11.—Anteroposterior view of the same patient as in figure 10, showing the bilateral widespread cortical atrophy and shrinkage of the brain. Note the area of "decompression" in the skull. The winglike air shadows are due to dilatation of the cisterna venae magnae cerebri over the superior surface of the cerebellum. Attention is directed to the interhemispheric air and the longitudinal sinus.

A spinal manometer (either mercury or water) should always be used, and the exact pressure determined.

When bloody fluid is present, drainage of the fluid should be done, allowing all of the fluid that will drain to be removed. This drainage should be repeated from once to three times daily, depending on the amount of blood encountered. The thorough drainage of the spinal canal will favor localization and clotting at the point of hemorrhage. The removal of all of the red blood cells possible, up to the fifth to seventh days, is important. Hemolysis is then evident, and the fluid becomes yellow. It is valuable to have a red blood cell count of the fluid daily, or to allow 10 cc. of the bloody fluid taken from each drainage to stand in a rack, so that the sedimentation of the cells can be compared each day.

It is evident that the object is to remove the red blood cells as rapidly as possible, so as to minimize the reaction of the meninges and the resultant harm to the subarachnoid pathways and pacchionian bodies, thus preventing the development of a chronic external hydrocephalus, with resultant brain atrophy. At the same time, during the phase of drainage, one has an excellent means of reducing intracranial pressure, and this factor is a most important one.

A few years ago I [12] considered the management of intracranial pressure in detail. Only an outline of the present method of treatment can be given at this time.

12. Fay, Temple: Administration of Hypertonic Salt Solutions for Relief of Intracranial Pressure, J. A. M. A. **80**: 1445-1448 (May 19) 1923; Comparative Value of Magnesium Sulphate and Sodium Chloride for Relief of Intracranial Pressure, ibid. **82**: 766-769 (March 8) 1924; The Control of Intracranial Pressure, ibid. **84**: 1261-1262 (April 25) 1925; Treatment of Cerebral Trauma, West Virginia M. J. **20**: 281-288 (June) 1925; Problems of Cerebrospinal Pressure, S. Clin. of North America **4**: 227-253 (Feb.) 1924.

TREATMENT OF CEREBRAL TRAUMA

Cases of acute cerebral trauma fall into two large groups; those requiring surgery, and those requiring dehydration or drainage. The cases requiring surgery are few and comparatively rare. The old method of decompression has been found responsible for many evils and has been replaced by more effective measures with far better results.

The indications for surgery are (*a*) a compound fracture of the skull; (*b*) a depressed fracture when the depression is such as to produce symptoms or impair function (minor depressions should be allowed to wait for at least two weeks in order to judge of their need for repair), and (*c*) middle meningeal hemorrhage or focal clot. There is rarely any other indication for surgical intervention.

The indications for dehydration or drainage, or both, are present when generalized symptoms of pressure without focal signs are present. The finding of bloody spinal fluid is usually the strongest point against surgical intervention, unless there are associated with its presence progressive focal neurologic signs of a superimposed clot. It is impossible to remove a subarachnoid hemorrhage adequately by surgical intervention over the cerebrum (exploration or decompression). Further harm usually results, and insult is added to injury. The extra-arachnoid hemorrhage (subdural) may also be associated with a subarachnoid hemorrhage (bloody spinal fluid), but the two conditions are distinct and must be treated as separate entities.

1. The patient is first treated for shock as soon as admitted to the hospital or seen by the physician. The bleeding of the scalp, if any, is temporarily stanched. Heat is applied to the body, and from 40 to 60 cc. of 50 per cent dextrose (adult dose) is given intravenously (Peet's method), the temperature, pulse and respiration are taken every fifteen minutes; the blood pressure is recorded every half hour and the pulse pressure is charted. Just sufficient physiologic solution of sodium chloride is given by vein, or the dextrose is repeated to offset the period of shock.

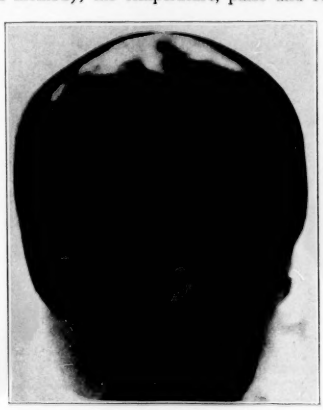

Fig. 15.—Anteroposterior view of same patient as in figure 14, showing the bilaterality of the cortical atrophy. The condition of this child suggested a mental deficiency, but there was no paralysis. Convulsions occurred infrequently.

2. The patient is then examined neurologically, as well as to the extent of the wound, and is palpated to determine whether a compound or depressed fracture is present.

3. Lumbar puncture is routine whether or not there has been a period of unconsciousness lasting more than a few minutes, and a spinal pressure reading is made, with a manometer. The character of the fluid is noted as to whether it is bloody or clear.

If the fluid is bloody, the spinal canal should be drained; if it is clear, without increase of pressure, the patient is placed on strict fluid limitation. Not more than 300 cc. of total liquid intake is allowed by mouth in twenty-four hours. Three ounces (94 Gm.) of magnesium sulphate crystals, in 4 ounces (120 cc.) of warm water, is given by rectum. This procedure is contraindicated if the patient shows signs of shock (pulse over 120, temperature subnormal). In the presence of shock, small amounts of physiologic solution of sodium chloride and dextrose may be given by vein until the pulse falls to 120. One and one-half ounces (47 Gm.) of magnesium sulphate crystals, in water, may be given by mouth the following day, if the patient is conscious. The strict limitation of the liquid intake for the following two or three days will maintain the desired dehydration.

A pulse rate of more than 120 may be considered as a need for more fluid, which can be given as needed by vein or mouth, in quantities just sufficient to keep the pulse between 100 and 120.

It is well established that as fluid is given to the patient there is an increase in cerebrospinal fluid production, and when the mechanism for its escape is damaged, increased intracranial pressure promptly results and later there develops generalized cerebral edema. Consequently, only fluids sufficient to meet the needs of the vascular system should be allowed, but no more. If large amounts of fluid are required to meet the needs of shock, or a continued high pulse, then spinal drainage, even in the presence of clear fluid, should be performed, until the patient is able to stand strict fluid limitation and dehydration.

After dehydration is established there will be found no need for lumbar punctures if the spinal fluid is clear, as the intracranial pressure and cerebral edema can be adequately controlled by the use of intravenous injections of dextrose and the administration of magnesium sulphate by mouth.

As magnesium sulphate depletes the vascular fluid volume, a rising pulse may result, and 50 per cent solution of dextrose by vein meets this need by drawing fluids from the tissues, at the same time reducing cerebrospinal fluid volume. A fine adjustment in the patient can be made by the judicious use of these methods.

4. The roentgenographic examination at the time of admission is of least importance, except when it is evident that a depressed or compound fracture exists. It is only of medicolegal value in the majority of cases, or to satisfy the curiosity of the physician. The roentgenogram may be obtained any time after the patient is out of danger. Every minute saved in getting to the early treatment of a severe case of head injury increases the chances for survival. Too often an hour is lost in waiting for an unnecessary roentgenogram while the patient's schock and intracranial pressure go unattended. The patient will survive or succumb, independent of the fractured skull. Rarely has a patient ever died of a fractured skull. Patients die because of hemorrhage, brain destruction or intracranial pressure. As a means of localizing a brain injury, a fracture is frequently misleading. If exploration for a clot is demanded, the neurologic signs should be the guide, not the location of the fracture. Often the lesion producing the sign of intracranial hemorrhage is contra-coup to the point of injury. If the neurologic signs indicate a progressive lesion elsewhere than the evident location of the fracture, one should operate on the basis of the neurologic signs, not on the roentgenographic observations.

5. The patients are maintained on a restricted fluid intake level for approximately three months following a severe head injury, especially if bloody fluid was obtained by spinal puncture. The intake is gradually increased from 500 cc. to 1,000 cc. but not more than 1,000 cc. daily is allowed until after the third month. They should be cautioned not to exceed from 1,500 to 2,000 cc. in the future. By this means of fluid restriction, overloading of the cerebrospinal circulation is not permitted, and the patients who have followed this method have been strikingly free from the usual post-traumatic headache, dulness, mental changes and vertigo.

I [13] have reported the method of restricting fluid in the idiopathic and symptomatic forms of the convulsive state which has resulted during the past two years in striking relief from attacks in certain cases. In these patients it has been possible to balance the fluid intake and output at levels ranging from 360 cc. total intake daily to 720 cc. of liquid, without difficulty or disturbance of the individual's health.

I have presented here what I believe to be a means of prevention of post-traumatic sequelae and cerebral atrophy and a method of treatment for this type of case.

SUMMARY

The use of encephalography as a means of determining the degree and extent of post-traumatic cerebral atrophy is a safe procedure. It has been of great value in demonstrating the extensive brain atrophy which may occur following a relatively slight injury. This atrophy occurs most frequently in the frontal and parietal areas of the cortex and is regarded as a pressure atrophy due to a disturbance in the cerebrospinal fluid eliminating mechanism (subarachnoid villi and pacchionian bodies), permitting an increase in the amount of supracortical fluid and pressure.

Drainage of bloody spinal fluid to prevent pacchionian deficiency, and control of fluid intake with proper dehydration, seem to offer the most effective method of treatment following cerebral injuries, and may check or prevent subsequent progressive cerebral atrophy.

2025 Walnut Street.

13. Fay, Temple: The Convulsive State: Results Obtained by Fluid Limitation, read before the Section of Neurology and Psychiatry, New York Academy of Medicine, Dec. 11, 1928.

Scientific Progress.—The last century was a period of unparalleled progress in the world's history. Marked advances were made in government, in industry, in transportation, but above all in the field of science and its applications for the benefit of mankind. Great and revolutionary as were the effects of steam transportation, the telegraph, telephone and electric light upon our civilization, equally great was the effect upon humanity of the increased knowledge of the causes of disease, its methods of spread, prevention and cure. Especially was this true of the last two decades of the century. While there had been an advance in empirical therapeutics and in the technic of surgery, until then little more was known in regard to the etiology and epidemiology of disease than had been known in all the years preceding.—Cumming, H. S.: Relation of the Medical Profession to the Public, *Virginia M. Monthly*, December, 1929.

THORACIC AND LUMBAR SYMPATHETIC GANGLIONECTOMY IN PERIPHERAL VASCULAR DISEASES

THERAPEUTIC VALUE *

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AND
GEORGE E. BROWN, M.D.
ROCHESTER, MINN.

With the advent of surgical procedures capable of producing arterial dilatation in the extremities, it becomes highly important clearly to define the types of vascular diseases that may be benefited by vasodilator measures. Considerable discrimination and caution should be employed in the selection of operable cases.

PRIMARY DISTURBANCES OF THE PERIPHERAL ARTERIES

Primary diseases of the arteries of the extremities can be classified in two main groups: (1) those of the vasomotor or functional nature, of which there are two types, vasoconstrictor disturbances (mild spastic attacks and Raynaud's disease) and vasodilator disturbances (erythromelalgia), and (2) those of organic disease of the arteries (thrombo-angiitis obliterans and arteriosclerosis with thrombosis).

Functional Vasoconstrictor Disturbances.—It is obvious that the vasoconstrictor disturbance affecting the hands or feet should be permanently relieved by thoracic or lumbar sympathetic ganglionectomy. Raynaud's disease represents the most favorable group for operative relief. There are, of course, many cases of mild spastic disorders of the extremities which are not sufficiently advanced either in symptoms or in signs to be properly classified as Raynaud's disease. These include the minor cases of acrocyanosis, in which the major disturbances consist of cold, cyanotic, moist hands or feet, but without trophic disturbances or pain of the affected parts. There is another group in which the disturbance is usually of short duration, in which the symptoms are present in the winter months, and consist chiefly of attacks of pallor, involving one or more digits, symmetrical in distribution, recovery from which is rapidly induced by exposure of the part to increased temperature. Pain and trophic changes are absent, the sole symptoms consisting of numbness or aching during the stage of pallor. We believe that these milder forms of vasospastic disturbances should not be designated as Raynaud's disease, although the physiopathologic disturbances are exactly the same. We have not operated in cases of this type but have reserved operation for the more advanced forms in which one or more of the following conditions exist: severe pain during the change of color, increasing difficulty in inducing recovery of the part, and trophic ulcers of the skin. In this vasospastic group there are a number of cases in which, following the symptoms of pallor and cyanosis of the extremities over a period of years, scleroderma-like changes occur in the skin. The symptoms in this group are more serious since, if left untreated, they will produce the extremely disabling disease known as scleroderma or sclerodactylia.

Functional Vasodilator Disturbances.—Since the peripheral arteries are dilated, it would not be expected that this type of case would be benefited by surgical measures or producing vasodilatation. Erythromelalgia is a syndrome characterized by intermittent attacks of vasodilatation of the hands or feet, symmetrical in distribution, and associated with severe burning of a most distressful nature. During the attacks the parts are red and flushed, and the veins are dilated and throbbing. The surface temperature is high. Relief is obtained by immersion of the parts in cold water, and elevation of the limb. We have not operated in any cases of this type for the reasons already given. The question has been raised as to whether relief from the pain would be obtained by interruption of the vasomotor pathways (a theoretical possibility based on the premise of Bayliss) or of antedromic fibers in the sympathetic pathways. We believe there has been insufficient proof for this to justify operation in this form of disturbance.

Organic Disturbances.—There are two main forms of occlusive disease of distal arteries, thrombo-angiitis obliterans and arteriosclerosis with thrombosis. In our experience these account for more than 90 per cent of the occlusive diseases of a chronic nature. The rationale of carrying out sympathetic ganglionectomy in cases of occlusive disease of the arteries has an entirely different basis than is the case with the vasospastic disturbances. As we have already pointed out, we have observed in some cases of thrombo-angiitis obliterans that two factors were apparently responsible for the diminished supply of arterial blood in the distal areas of the extremities: that due to occlusion of the main arterial channels by the obturating thrombosis, and that due to an abnormal degree of vasospasm of the collateral vessels. The relative importance of the latter factor was brought to our attention by the fact that the volume flow of blood through an extremity as measured by the rate of elimination of heat increased markedly in many cases of thrombo-angiitis obliterans with increases of environmental temperature and during fever. It became necessary then to devise a method by which one could ascertain in a given case the amount of vasospasm present in the collateral circulation. This was accomplished by taking the surface temperature of the affected digits simultaneously with the mouth temperature during fever produced by injection of nonspecific protein in the form of typhoid vaccine. By this method it was found that there were two types of cases: those with large degrees of vasomotor spasm, and those in which the element of spasm was slight or negligible. Further confirmation of the significance of the element of spasm in occlusive disease of the arteries is demonstrated by many cases of thrombo-angiitis obliterans in which there is definite color change on the acral areas simulating that obtained in Raynaud's disease; in other words, a secondary vasospastic disturbance of the collateral circulation. We have used as a criterion for sympathetic ganglionectomy the so-called vasomotor index. The cases in which the surface temperature of the affected part would increase two or more times the increase in the blood temperature (as manifested by increased mouth temperature) have been counted suitable for operation. Of course, other factors are taken into consideration in selecting surgical cases, such as the age, economic status and general condition of the patient.

Arteriosclerotic diseases of the arteries of the legs, or so-called senile or diabetic gangrene, demand different considerations than the other forms of arterial disease. The patients are in the later decades of life, their recuperative powers are less, and development of the

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collateral circulation, as demonstrated by Horton in his injection methods, is inadequate, as compared with that in cases of thrombo-angiitis obliterans in the younger subject. Vasomotor changes are present in a much less degree than in the other forms. The vasomotor index is usually slight or zero. Because of these considerations, we have not carried out either lumbar or thoracic ganglionectomy in cases of senile gangrene. Possibly there is a group with severe forms of pain, but without gangrene, in which sufficient benefit would be obtained, from the standpoint of relief of pain, to justify the procedure; but due consideration must be given to the age of the patient and the operative risk involved in operations of this magnitude.

SECONDARY FORMS OF VASOSPASTIC DISTURBANCES

There is a number of cases in which vasospastic disturbances of the extremities occur secondary to some organic disease of the nerves or vessels, or secondary to cervical ribs. In our experience, these secondary types have been associated with thrombo-angiitis obliterans, peripheral neuritis, cervical rib or arteriosclerotic disease. The disturbance is usually asymmetrical; single-phase color reactions are the rule. Pain and disability from the vasomotor disturbances are less likely than from the primary disease. In this form of vasospastic disease, the operations on the sympathetic ganglions should not be carried out unless it is demonstrable that the vasomotor disturbance is severe, producing pain or trophic lesions. The results in this group are, as would be expected, less conclusive than in the primary or the essential form, since an underlying organic change in the vessel may prohibit complete vasodilatation.

RESULTS FROM LUMBAR AND THORACIC SYMPATHETIC GANGLIONECTOMY

Raynaud's Disease.—Six patients with primary Raynaud's disease of the feet have been operated on. The postoperative periods of observation have been from one to four years. In every case the results were complete and permanent. The feet have been persistently warm and dry during the coldest weather. The usual reflex vasomotor activity occurring in the normal skin is abolished. Untoward effects have not been observed. The surface temperature of the feet in these cases before operation was low, varying from 16 to 25 C. (60.8 to 77 F.). After operation the surface temperature is maintained from 30 to 34 C. (86 to 93.2 F.) with only moderate variability when studied from day to day in changing environmental temperature.

Thoracic sympathetic ganglionectomy has been carried out in five cases of Raynaud's disease of the upper extremities. In all these cases the disturbance was of a severe type; dry ulcers were present and the condition constituted a real disability. Postoperative periods of observation in this group have been from two to eleven months. Three cases have been followed throughout the cold weather, without evidence of spasm of the surface vessels. The color changes have been abolished, and the hands have been warm and dry. Postoperative temperature has ranged from 27 to 33 C. (80.6 to 91.4 F.). In one case, seven months after operation, mild cyanosis of two fingers could be induced with emotional upset. The explanation of this is not clear; possibly a gray ramus was missed in the operation, but the beneficial effects of operation have not been diminished to an appreciable degree.

In two extreme cases of Raynaud's disease of the hands, including the case already referred to, in which cervicothoracic ganglionectomy had been performed, we have noticed a venostasis phenomenon following the operation, which we have never observed in postoperative results in the treatment of Raynaud's disease of the lower extremities. This phenomenon consists in a filling process of the fingers and hands when they are allowed to hang quietly from the shoulder. The skin takes on a reddish color and appears to be stuffed, but as soon as the hands are raised the color returns to normal, and if they are raised to the level of the shoulder they blanch to a pale white, lighter than normal skin, and the stuffy appearance disappears. This phenomenon is not particularly troublesome nor does it occur if the hands are used in the average occupations of life.

Scleroderma.—Operation has been performed in four cases of scleroderma. In three of these cases the disease was in the hands and the thoracic operation was done; in one case the condition was most marked in the feet, and lumbar ganglionectomy was done. Two of the cases were of severe type with marked atrophy and fibrosis of the skin of the hands, deformities, and dry ulcers over the knuckles, with the skin of the face and neck involved to a lesser degree. The beneficial effects in the severe types, as measured by the increase in the surface temperature, were definite. The amount of heat eliminated from the hands showed conclusive increase. The ulcers were healed, pain was relieved to a considerable degree, and the vasospastic attacks, previously induced by cold, disappeared. The results in these cases could be considered from 30 to 50 per cent improvement, sufficient to justify the operation from the standpoint of relief of pain, coldness, and probably protection from further loss of tissue. The skin did not become noticeably softer and the surgical wound was extremely slow in healing in one of these cases. In the other cases, in which the scleroderma was less marked, the results were excellent and could be conservatively estimated as from 70 to 80 per cent relief. The skin became less tense, the swelling less, vasomotor spasms were relieved, and there was increase in surface temperature comparable to that obtained in a pure case of Raynaud's disease. We are convinced that the most effective treatment in cases of scleroderma will depend largely on early diagnosis and the institution of therapeutic surgical measures before fibrosis and atrophy of the dermis has taken place.

Thrombo-Angiitis Obliterans.—In twenty cases of thrombo-angiitis obliterans, lumbar sympathetic ganglionectomy has been carried out on the lower extremities. Four of these operations we would consider as failures or partial failures, in that one extremity required amputation from two weeks to one year after operation. The additional factor of protection afforded to the opposite limb by the operation is probably ample justification in spite of the loss of one limb. In sixteen cases the surface temperature increased in every instance, but not to the degree observed in the cases of Raynaud's disease. The increase of heat eliminated, relief of pain and healing of ulcers have frequently been spectacular. In four cases thoracic sympathetic ganglionectomy has been performed for thrombo-angiitis obliterans affecting the hands. In this group the results have been eminently satisfactory, and clinical improvement has been accompanied by demonstrable maintained increase in the surface temperature. The relief from pain has been striking. We would emphasize that this operation is not a cure-all for this type of disease. We have regarded it as a supple-

mentary or protective measure that affords the patient an additional supply of blood in the extremity during the active thrombosing stage of the disease. The operation does not protect, as far as we know, against relapsing thrombosis in other segments of the arteries. We believe that the disease is of a self-limiting type and that eventually the majority of patients, if properly protected against trauma of any description, should not require amputation. It is possible that the increase in the rate of flow of blood through the affected arteries may be an additional factor in the prevention of thrombosis. However, this is purely theoretical. About one of every six or seven cases observed in the last two years has fulfilled the requirement we believe necessary for a successful operation. The condition of many of the patients manifesting mild symptoms can readily be controlled by medical management. Extreme cases, with a vasomotor index of zero, do not justify sympathetic ganglionectomy and trunk resection.

SUMMARY

Sympathetic ganglionectomy and trunk resection is a surgical procedure of considerable magnitude which we are justified in using in the treatment of advanced cases of Raynaud's disease, in the early developing vasospastic cases of scleroderma and in cases of thrombo-angiitis obliterans in which vasospasm of the collateral arteries exists. The operation is probably indicated in allied and borderline cases but should be employed with caution, for the procedure is not a cure-all for all peripheral vascular diseases.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. FAY AND DRS. ADSON AND BROWN

DR. GEORGE W. SWIFT, Seattle: I have seen the work of Drs. Adson and Brown and have seen the results of their operation, and I am sure that they are just beginning to explore a field of surgery which we shall find in the future to be most beneficial to that group of cases which at present respond neither to medical nor to surgical treatment. After Bingel published his paper in 1923, reporting 300 cases of encephalography, I began to use this method rather than the direct method for insufflating the ventricles. Gradually I have learned a technic which is safe and absolutely without danger to the patient. I use this method as a routine in all cases of head injuries and in all cases of epilepsy, and in the diagnosis of obscure neurologic cases. It gives a positiveness obtainable by no other test. I want to compliment Dr. Fay on the ingenious way in which he demonstrates the use of air in the Scientific Exhibit. Dr. Fay uses more air than I do in encephalography. I do not believe it is necessary to use more than 50 cc. in the average case. There is much less shock to the patient and by careful roentgen study one is able to outline practically the entire ventricular system. The state of Washington has a great many cases of head injuries as the result of aerial logging operations. The chronic edema following head injuries is accountable for many total disabilities and these men are a heavy economic loss to the state. It is toward the prevention of this edema that we are now bending every effort. Decompressions have not been of value in the treatment, but long continued dehydration is essential.

DR. P. G. FLOTHOW, Seattle: I wish to report two cases of thoracic sympathectomy to demonstrate the results that may be obtained. A man suffered an avulsion of the brachial plexus six years ago. He had a flail arm, and the sensation of a third arm, with terrific pain in the imaginary arm. We did a rhizotomy of the intact roots of the brachial plexus, two posterior and one anterior, hoping to relieve some of the pain. As we anticipated, we did not obtain any results. In thinking over this case, I decided that there was a possible connection between the brachial plexus and central nervous system by way of the gray rami from the spinal nerves to the sympathetic chain and into the cord by way of the lower cervical and upper dorsal sympathetics. We performed thoracic sympathectomy, removing the stellate ganglion, the second thoracic ganglions and the trunk. This man is entirely relieved of all pain. The operation was done several months ago and there is no recurrence of pain. The other case was one of trifacial neuralgia. The sensory root had been cut and the area of distribution of the trifacial nerve was anesthetic. For six months following the operation the patient was relieved; then the pain recurred in the supra-orbital division. The pain was severe and seemed to be a sympathetic type of pain. We know that following cervicodorsal sympathectomy a Horner's syndrome develops with absence of perspiration over half of the face, enophthalmos and a fixed contracted pupil. This proves a sympathetic nerve supply to the area supplied by the trifacial nerve. Possibly there are some pain fibers going through the sympathetics to account for these recurring pains after operation. This man's pain was so intense that he tried to commit suicide three times while waiting for operation. The same operation was done as in the first case. The man is entirely relieved of pain. Whether it will last, I do not know. I report these cases as suggestive of the possibilities of sympathetic surgery and to indicate the probability that sympathetic fibers do transmit painful stimuli.

DR. A. W. ADSON, Rochester, Minn.: Dr. Fay and his associate have demonstrated a definite pathologic condition that has been more or less a problem to many of us doing this type of surgery. While some of the results of sympathectomy have been spectacular, we should still proceed cautiously since new procedures are usually abused and unless employed properly the results will be poor and the procedure may fall into the discard and the originators into disrepute. The same may be said for encephalography. Sympathetic ganglionectomies are fairly simple procedures, but may readily be complicated by serious anatomic injuries if one is not careful in the dissection, because one is juggling not only the abdominal vessels and viscera but the lung, the pleura, and the vessels of the mediastinum. It is important not only to carry out a careful dissection but to select patients suitable for operation. In order that relief may be experienced from sympathetic ganglionectomy and ramisectomy, it is essential in the management of vascular diseases that there exist a vasomotor spasm of the primary or collateral arteries to account for the disease, which, if relieved, immediately improves the circulation and relieves the symptoms. Dr. George E. Brown has developed a fever test, in connection with the study of skin temperature, which provides us with information as to whether or not the patient's peripheral vessels are under spasm and are susceptible of being relieved by sympathetic ganglionectomy. In a few selected cases of chronic infectious arthritis, we have employed sympathetic ganglionectomy and ramisectomy. I shall not attempt to report these in detail but shall refer simply to the probable indications for operation, which are similar to those applying in the selection of suitable cases for operation in the treatment of Raynaud's disease, thrombo-angiitis obliterans, and scleroderma of the vascular type. In other words, chronic polyarthritis likely to be improved by surgery is the type which presents a long history of cold, moist, cyanotic, clammy skin over the extremities with classic periarticular changes, e. g., atrophy, spasm, contractures and deformities, without destruction of the joints. Briefly, we attempt to select the patient who presents a history of vasospastic disorder of the peripheral vessels. However, previous to subjecting him to any type of surgery, one should administer the usual therapeutic measures employed for arthritis; if these fail, and the vasospastic phenomenon exists, sympathetic ganglionectomy and ramisectomy should be undertaken.

DR. TEMPLE FAY, Philadelphia: In presenting the post-traumatic side of cerebral pressure atrophy, it has been impossible fully to take up the details which must be considered in the problem. This type of cerebral atrophy, which is so common, is possibly post-traumatic in origin. Whether we know the exact origin of the trauma or whether we consider the symptoms in the light of an idiopathic process, those cases that show the shrunken type of brain seen in the imbecile, the idiot and the moron are quite similar and are possibly of inflammatory or traumatically defective origin. That the mechanism of this increased supracortical fluid accumulation has a wide range of application therapeutically in the acute and chronic states cannot be too strongly emphasized. For instance, the true cerebral

edemas are frequently seen in the eclamptic and uremic as well as in some of the exanthematous conditions in childhood. These warrant an active consideration of the fluid factor in the same sense as though it were a cerebral edema of traumatic origin. We have found in these cases a marked cerebral edema. We produce the same changes by forcing fluids in the human being that Rowntree produced in the animal by excessive intake of fluid. Too frequently the post-traumatic, uremic or eclamptic patients, and children with high temperatures and nephritis, cannot properly eliminate the large quantity of fluid given, and overaccumulation occurs within the skull, which does not yield to the oncoming cerebral edema. We are rapidly producing conditions of intracranial pressure (dulness, stupor, convulsions), which are being seen more frequently and from which we perhaps are unable to isolate the symptoms of the disease itself. A balance of intake and output is important. If fluid is required and elimination is poor, spinal drainage may be resorted to. If the individual is given excessive fluids and cannot eliminate them effectually because of a defective kidney or because the skin outlets are closed down and dry as the result of a high temperature, one must consider the possibilities of producing a cerebral edema. Dehydration should be undertaken in these cases by placing the patient on an intake of less than 30 ounces (900 cc.) of total liquid a day. We have used spinal drainage two or three times a day, in those cases in which the giving of fluid is essential, taking as large quantities of spinal fluid as we could obtain. On the other hand, we have found dehydration of great help in the less acute manifestations. Unilateral cerebral edema frequently is associated with acute mastoid disease; the convulsions and paralysis are symptoms mistaken for brain abscess or meningitis. The intracranial pressure mechanism and fluid mechanism warrants a more detailed consideration by the physician of the part that it plays in many conditions.

AN AID TO THE DIAGNOSIS OF COLONIC ADHESIONS*

LOUIS J. HIRSCHMAN, M.D.
DETROIT

In recent years, one of the subjects that have appeared most frequently in the literature and been freely discussed in medical societies is the subject of colitis. More attention is being paid to colitis in its various forms by physicians at the present time than ever before in medical history.

While it is true that acute and chronic inflammatory and ulcerative conditions involving the large intestine are being diagnosed and treated in greater numbers at present than heretofore, it is also true that overenthusiasm has led many practitioners astray.

On account of the intense interest taken in the subject of colitis by physicians in private and in sanatorium practice, the public has become obsessed with a colitis complex. Every deviation from the normal physiologic function of the colon is immediately labeled "colitis" and various forms of medicinal, vaccine, dietary, electrical, hydrotherapeutic and institutional forms of treatment are prescribed. In the various types of true colitis any or all of these methods of treatment may be indicated and in competent hands will prove beneficial.

There is a large class of patients, however, who present symptoms of colonic dysfunction that is not due to the inflammatory or ulcerative disease condition known as colitis. These patients are troubled with either obstipation or diarrhea or both alternately, with abdominal distention, painful and crampy movements and an increase in the number of daily stools, which contain large quantities of mucus, sometimes mixed with blood or with pus. While these symptoms along with disturbed digestion, some loss of weight and lack of ambition and energy are also found in patients suffering from colitis, the patients in the latter group are not true colitis patients.

In my own experience and in the experience of many other observers, a large proportion of the patients who come for relief of "colitis" present a history of one or more previous laparotomies or, in women, pelvic inflammatory disease or pathologic confinements.

It has been my custom for many years to make a routine fluoroscopic examination of all the patients presenting colonic symptoms. In the course of these examinations, particularly of those patients who possessed abdominal scars or points of tenderness on manipulation, certain points of bowel fixation or immobility were repeatedly noted. In the course of manual manipulation after the administration of an opaque enema under the fluoroscope it was found that certain manipulations produced definite results.

When an operative scar was noticed on the patient's abdomen and traction made on the scar, fluoroscopic observation noted either fixation, immobility or distortion of the part. On pulling or tugging it was found that portions of the colon could be drawn in the direction of the pull. For instance, in tugging on a median scar a downward pull on the transverse colon would be seen, or an upward or outward pull would draw a loop of the sigmoid with it. Traction on a right rectus scar would often not only pull the cecum with it but frequently pull the transverse colon as well. The results of these tugging efforts indicated adhesions, either directly between the viscus and parietal perineum or omental adhesions from the colon to the scar, or binding several points of the large or small bowel to the scars.

In many patients the sigmoid would be found fixed in the lower left pelvis and occasionally a definite angulation of the left median colon with adhesion of the omentum to the left broad ligament and adnexa. In the latter instance, these conditions were often found in patients who had not had a previous laparotomy but had had some inflammatory disease of the pelvis or a stormy confinement.

It has been interesting to note in many patients who have presented roentgenograms and reports accompanying these that often no pathologic condition was evident from a study of these films. In many of my cases, films that were made as a matter of record failed to disclose any marked deviation from what would be considered a normal outline and position of the colon. It was only when the tugging sign was used that fixation, angulation or adhesion was demonstrated.

Studies were made both with the colon filled with barium solution and after a bowel movement with the expulsion of a large part of this barium solution. After observing many patients in this way I have been able to prognosticate or predict where certain adhesions will be found and in what way the bowel will be distorted. On a subsequent laparotomy, under spinal anesthesia, the demonstration of these adhesions would check up with the previous observations by the tugging sign under the fluoroscope in a manner that was almost uncanny.

Most frequently women who gave histories of laparotomies for the removal of some pelvic pathologic condition presented symptoms that were erroneously

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diagnosed as colitis. These patients usually complained of irregular and irritable movements, colicky pains and the expulsion of large quantities of flatus. The stools did not show any evidence of indigestion and were either loosely formed or occurred in small boluses and were accompanied by mucus, which was usually not blood-tinged.

In the majority of cases in which blood was noticed, the examination disclosed the presence of anal ulcers or internal hemorrhoids to account for this condition. When one of these patients was placed under the fluoroscope and a barium enema administered, the points of delay in the upward progress of the barium emulsion were carefully noted. It was usually at such a point that abnormal fixation would be expected. While with the patient lying in the dorsal position the colon might appear normal in size, contour and position, by palpation and manipulation on either side of the abdomen much of the colon would be found freely movable.

The sigmoid or transverse colon would be found immovable except when traction was exerted on an abdominal scar. When this was done it was found that the scar was adherent to the bowel or to the omentum, and tugging on the scar would cause a definite movement of the viscus in the direction of the pull.

Occasionally in patients complaining of ovarian, tubal or bladder symptoms, an upward pull or tug on the abdominal scar would cause pain or traction, decidedly referable to these organs. A chronic appendicitis with adhesions could be quite definitely demonstrated by tugging over the cecum. This traction will often show immobility of the ileocecal region and frequently cause definite localized pain. In one instance a tugging on the median scar produced gastric distress to such an extent that adhesions to the stomach were suspected. After ingestion of a barium solution by mouth under fluoroscopic observation, tugging on the abdominal scar revealed that the surmise was correct and that the greater curvature was adherent to the scar.

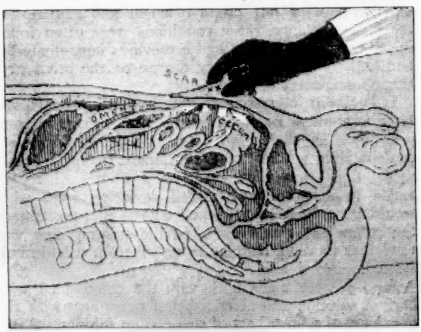

Fig. 1.—Grasping the abdominal scar and showing the traction on omental and cecal adhesions.

In my personal practice I have come to place great reliance on this tugging sign. Some roentgenologists have been using it as a routine and have confirmed my opinions as to its value as a diagnostic aid.

It is offered to the profession with the hope that it will be tried out and evaluated by those proctologists, gastro-enterologists, abdominal surgeons and roentgenologists who have access to considerable clinical material.

While it is true that many men have observed the presence or absence of motility on manipulation under the fluoroscope, personal discussion with many observers has indicated to me that no particular importance has been attached to the diagnosis of colonic adhesions by manipulation or tugging the point of tenderness or in the region of abdominal scars.

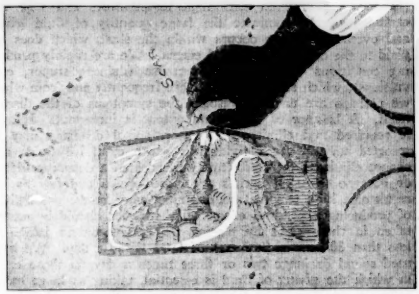

Fig. 2.—Traction on abdominal scar, showing adhesions of scar to the small intestine and cecum.

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ABSTRACT OF DISCUSSION

Dr. B. H. Orndoff, Chicago: Since 1914 it has been somewhat of a hobby with me to attempt to determine the presence of fixed viscera in the abdomen by roentgenologic methods. Between the years 1914 and 1919 we attempted to devise different methods of examination or of technic whereby these fixed viscera could be properly and definitely diagnosed. In connection with the colon we found that it was useful to observe the patient in a prone position, rolling him in different directions and having the x-ray beam pass through the patient anteroposteriorly or postero-anteriorly. In this way we gave the intestines, after they were filled with the barium meal given the day before, an opportunity to move as far as they could in any direction, and if they were fixed at any one point we would see the same evidence found by the author in the fixation of the transverse colon. With a fixation along the ascending colon, by having the patient lie right side up, with the x-rays passing from back to front and the screen in front, we could move the colon downward, except at the point where it was fixed. The tugging sign that has been mentioned by the author we seem to see only when it is fixed to the anterior abdominal wall. Most of our cases show intervisceral fixations, as well as posterior fixations to the abdominal wall. In 1919 we developed a new peritoneoscope and with this we are able to show definite films of the adhesions of any viscus to the abdominal walls. By intervisceral examination, a correct diagnosis concerning fixations was given to us such as we never had before. This led, however, to developing special technic and special tables. A table was developed in 1919, at my suggestion, by the Victor Electric Corporation which has been in my hands since that time. It permits easier manipulation of the patient than is usually present in the radiologic laboratories.

Dr. Dudley A. Smith, San Francisco: I am glad that Dr. Hirschman has again called attention to this method of examination. In this class of patients, the condition which causes the symptoms is largely overlooked. These patients are usually chronic invalids and many are in a miserable condition. I feel that it is of the greatest importance to discover kinks and adhesions which are causing symptoms. We all know that many adhesions in the abdomen cause no trouble at all. How-

ever, those adhesions and bands which cause sharp kinks in the intestine are productive of symptoms. I am sorry that I am not able to do this work myself as Dr. Hirschman has been able to do it from long years of experience. He is fortunate in that. I have found it rather difficult to find radiologists who were willing to give the time and the attention to these cases and who knew the technic necessary to demonstrate these lesions.

DR. JOHN L. JELKS, Memphis, Tenn.: This is of little importance, for these are nearly all patients with melancholia of an extreme type. As I have sometimes called them, they are chronic grunts; they never get well. Nevertheless, I am extremely interested in the cause. Why are we seeing so many more of these adhesions today than in former years? Thirty-five years ago, when I was doing abdominal surgery, we used a wet, tender, smooth sponge in the abdomen. What are they giving us now? I have to fight my nurses to keep them from giving me dry gauze, which other surgeons use. Of course, it is easier to keep the intestines back with a big dry pad. They will stay, yes, but what is being done to them? The endothelial covering of those intestines is being eroded, and adhesions form. The next time, when it is necessary to divide them, we do the same thing. The nurse gives us the dry gauze, we stick it in, divide the adhesions and, of course, get two or four more. As to a diagnostic sign, that is important. If an adhesion is present and the surgeon presses on one side, an umbilication will be obtained over the adhesion. It is so easy to mark out the points of adhesions in the intestines, especially if they are about the cecum or about the transverse colon. I am chiefly afraid of dealing with adhesions of the pelvic colon. I can control those less easily.

DR. LOUIS J. HIRSCHMAN, Detroit: I want to emphasize simple manipulation and tugging, which I know is not being practiced by many men in this country in any sort of routine manner. I also want to present an additional "check-up" for these patients with "colitis" who drift from one clinic to another, patients who have been referred to as "surgical derelicts" and have been treated for colitis at the various corner "colon laundries" and other places. There is too much of that. Not only our profession but nurses, masseurs, bathhouse attendants, hydrotherapeutists, chiropractors, and others are all taking advantage of the great American indoor sport of washing out the colon, and a lot of these patients look very much washed out after some of these treatments. Let us find out why these patients have these symptoms and relieve them. We do know that most of these patients have adhesions following surgical operations, after pelvic inflammatory disease, and some after stormy confinements. If we find that a fixation is interfering with the normal, tranquil journey of the feces down the intestinel canal to the outlet, we should straighten out the curves and shorten the grades and put the bowel in the best possible shape. What Dr. Jelks emphasized about prophylaxis is vital. That is the thing we have been preaching for years, because the patients we have seen with abdominal adhesions have not all come from the recent surgeons. They were operated on in the days when we did not know anything about rubber gloves and when we opened through a small incision, reached in with a finger, took out something and then closed the incision. We always used sea sponges or dry or wet gauze, and we always used dry gauze drainage. If we did not insult the peritoneal coating of the bowel by drainage, we stuffed it with a tube so that the bowel could come up and hit it. We now know more about peritonealization and about avoiding injury to the bowel during operation. If spinal anesthesia and rubber dams are used to protect the bowel from the surgeon, I think there will be fewer adhesions in the future and we shall hear less about "colitis" from that source. As far as pneumoperitoneum is concerned, when it was first brought out we were worried about it. When we get worried in the best of surroundings, what is a man going to do who is away from the surgical centers, when some of those in the surgical centers cannot make a diagnosis with a roentgenologic outfit, a barium enema, a pair of hands and eyes that can see? My only reason for bringing this up at this time is that I believe the tugging sign is a simple addition to our diagnostic technic.

RETRODISPLACEMENT OF THE UTERUS AS AN OBSTETRIC COMPLICATION *

E. D. PLASS, M.D.
IOWA CITY

Retroposition of the uterus as an obstetric complication is not a new subject for discussion by this section or by obstetricians generally, but apparently no attempt has been made to learn what will happen if no corrective treatment is instituted during pregnancy or after delivery. Various degrees of conservatism have been advocated from time to time until the retroverted uterus has lost a great deal of its former importance, but there is still a feeling that it is a real complication. Among obstetricians it is frequently blamed for sterility and for early abortion, and the advice is usually given that a retroposed uterus discovered in early pregnancy should be replaced at once, lest untoward symptoms develop. Moreover, there is a strong feeling that child-bearing plays an important rôle in producing posterior displacements and that it is essential for the physician to insist on correctional exercises and to institute pessary treatment whenever a retroversion is detected after delivery. For some time I have been skeptical of the value of such procedures and so have treated a fairly large group of patients in complete disregard for the position of the uterus.

TABLE 1.—*Retroversion of Uterus in Four Hundred and Thirty-Eight Patients Examined Before the End of the Third Month of Pregnancy*

Number	Parity	Uterus Retroverted	
		Number	Per Cent
217	Primiparas	24	11.1
221	Multiparas	38	17.2
438	Total	62	14.2

In obstetric practice, one is dealing almost entirely with uncomplicated retropositions or at most with those which are only slightly adherent, since extensive adhesions are usually associated with tubal and ovarian lesions which tend to make conception impossible. Opinions still differ somewhat as to the significance of such uncomplicated retroversions, but, generally speaking, they are held to be of little consequence, a view with which I can heartily agree.

Posterior displacements may be classified as "congenital" when no etiologic factor is determinable, and "acquired" when some experience, especially an obstetric episode, is held to have a causal relationship. Stacy [1] and Polak [2] have recently determined that approximately 20 per cent of all unmarried women without a history of pelvic infection, pelvic tumor or pregnancy have "congenital" retrodisplacements. No adequate explanation for these displacements has been forthcoming, but the fact that one woman in five shows the condition would seem to support the idea that mechanical or developmental factors may be the

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eightieth Annual Session of the American Medical Association, Portland, Ore., July 10, 1929.

1. Stacy, L. J.: Anteroposition and Retroposition of the Uterus: Incidence and Symptoms, J. A. M. A. **79**: 793 (Sept. 2) 1922.
2. Polak, J. O.: Acquired Retrodisplacements of the Uterus, New York M. J. **111**: 89 (Jan. 17) 1920.

determinants. In considering retroposition as a complication, one must keep constantly in mind this high incidence of "congenital" displacements.

Among a series of approximately 1,500 private obstetric patients, cared for under my supervision at the Henry Ford Hospital from 1922 to 1926, a strict policy of noninterference was inaugurated in order to learn something about the course of pregnancy in the retroverted uterus and the natural incidence of postpartum retroversions. For the purpose of this study, I selected 438 patients who were first seen before the end of the twelfth week of pregnancy, as determined from the onset of the last menstrual period. There were 217 primiparas and 221 multiparas.

TABLE 2.—*Abortion Among Four Hundred and Thirty-Eight Patients Seen in Early Pregnancy [One to Three Months]*

Position of Uterus	Number of Patients	Abortions	
		Number	Per Cent
Anterior	376	21	6
Retrodisplaced	62	6	10

Sixty-two (14 per cent) of these 438 women had a retroposed uterus at the time of the first examination, whereas 376 showed the uterus in the more usual anterior position. Among the primiparous patients the incidence of retroversion was 11 per cent, and among the multiparous 17 per cent.

These figures tend to refute the statement frequently made that retroversion is uncommon during pregnancy and particularly in the first gestation. Undoubtedly, certain other patients had retroposed uteri which had replaced themselves before the initial examination, so that the observations represent a minimum rather than a maximum number.

No attempt was made to replace the uterus, although occasionally during bimanual examination the organ suddenly changed its position. Even in such cases pessaries were not employed to maintain the new anterior position of the organ. Excluding seven patients with abortions (one therapeutic and six spontaneous), there were fifty-five in whom the pregnancy continued under my supervision, and in only one was there any suggestion that manual replacement might be necessary. This woman, a primipara with a previous diagnosis of adherent retroversion, progressed to the sixth lunar month of pregnancy before the uterus righted itself. During this time there was slight pelvic distress and a moderately increased frequency of urination but no symptoms that demanded relief. At the last examination before spontaneous reposition took place, the cervix was well up behind the symphysis and there was apparently an overgrowth of the anterior wall of the uterus. The pregnancy went to term, and after delivery the uterus returned promptly to its former position. This patient has since had a second pregnancy, during which spontaneous reposition of the uterus took place during the fourth month. Among the other patients there were no symptoms of any consequence although several complained of an annoying frequency of urination, which was apparently more marked than is usually seen in early pregnancy but still not severe enough to require relief. Backache was no more prominent than in the group with the uterus in the anterior position, and bilateral pelvic pain was never troublesome.

This demonstrated frequency of retrodisplacement of the early pregnant uterus constitutes an argument against the belief that this position is a frequent cause of sterility. Wide variation of opinion exists on this question, as illustrated by De Lee,[3] who says, "Retroversion and retroflexion are rare in nulliparae, and when they do occur, usually cause sterility," and by Findley,[4] who writes that "when sterility exists [in patients with backward displacements of the uterus] we must look to complications both local and general for the underlying cause." The latter opinion is shared by Hunner and Wharton [5] and by Danforth and Galloway,[6] who insist that the retroversion itself rarely leads to sterility.

The fact that not infrequently patients conceive some time after a retroverted uterus has been replaced constitutes poor evidence that the reposition has led directly to the cure of the sterility. It is well recognized that previously unfertile women may suddenly become fertile in the absence of any treatment directed at the sterility. Rubin [7] insists that, for tubal insufflation to be considered effective in relieving sterility, conception must occur within two months. It would be equally fair to demand that a uterine suspension be looked on as a cure for sterility only if conception occurs within a short period—not longer than one year. With such a criterion, cures by this procedure are certainly uncommon.

Williams [8] says that "abortion is common in pregnancies complicated by retrodisplacements" but gives no figures to support this statement. On the other hand, Danforth and Galloway [6] say, "It would appear that, although retrodisplacement may operate as an occasional, not particularly frequent, cause of abortion, its importance as a causative factor should not be overestimated." They cite four abortions among fifty-five retroversions in early pregnancy (7 per cent), one apparently due to attempts at replacement.

Among the patients in whom the uterus was anterior there were twenty-one spontaneous abortions (6 per cent), while in the group of retrodisplacements there were six (10 per cent). The abortions in patients with retroversions all occurred before the end of the tenth week, when pressure on the growing uterus could scarcely have been a potent factor. It is more reasonable to attribute these accidents to the more common cause of abortions, abnormal development of the

TABLE 3.—*Position of Uterus After Delivery*

Uterus at Discharge				Uterus at Final Examination			
Anterior		Retroverted		Anterior		Retroverted	
No.	%	No.	%	No.	%	No.	%
Uterus Anteverted (One to Three Months Pregnant)							
251	84	47	16	239	74	72	26
Uterus Retroverted (One to Three Months Pregnant)							
30	63	18	37	19	40	28	60

3. De Lee, J. B.: Principles and Practice of Obstetrics, ed. 4, Philadelphia, W. B. Saunders Company, p. 432.
4. Findley, Palmer: Frequency and Clinical Significance of Displacements of the Uterus, J. A. M. A. **79:** 795 (Sept. 2) 1922.
5. Hunner, G. L., and Wharton, L. R.: Sterility: A Study Based on a Series of 526 Patients, South. M. J. **17:** 269-277 (April) 1924.
6. Danforth, W. C., and Galloway, C. E.: Retrodisplacement of the Uterus During Pregnancy and the Puerperium: An Analysis of 1,000 Private Cases, J. A. M. A. **87:** 826-829 (Sept. 11) 1926.
7. Rubin, I. C.: Uterotubal Insufflation Followed by Pregnancy in 205 Cases out of a Series of 2,000 Cases of Infertility, Am. J. Obst. & Gynec. **17:** 484-502, 1929.
8. Williams, J. W.: Obstetrics, New York, D. Appleton & Co., ed. 5, 1927, p. 644.

embryo, and to speculate as to whether the circulatory changes said to result from retroversion may have led to imperfect development of the conceptus. The present series is too small for accurate comparisons, but it seems that retroversion may add slightly to the danger of early interruption of pregnancy. Replacement of the uterus, even bimanually as usually recommended, is certainly not devoid of danger to the pregnancy, and it is my belief that a long series of cases would show the balance to favor the policy of nonintervention.

If one assumes, as would be just, that retroposition of the uterus is not a potent cause of sterility and that at least 20 per cent of women have the organ thus displaced, the frequency of the complication in early pregnancy immediately becomes apparent. It is only the fact that patients do not present themselves for examination in early pregnancy that has prevented the medical profession from recognizing the comparative harmlessness of this more unusual backward position of the uterus. Pregnant patients are now consulting their physicians much earlier and it is possible for each obstetrician to convince himself that retrodisplacement of the uterus is not really pathologic unless there is a complicating factor.

The occurrence of pregnancy in an adherent retroverted uterus must always carry the threat of incarceration and sacculation until the position is corrected spontaneously or otherwise, but the fact remains that these complications are extremely rare. I have never been confronted with such situations and the recent literature contains but few accounts of their occurrence. It is no more reasonable to emphasize these possibilities than it is to stress the fact that acute edema of the lungs may offer a serious complication in the early postpartum period.

Among the 376 patients who were seen in early pregnancy with the uterus in anterior position, forty-five did not go to term or they were delivered elsewhere, leaving 331 on whom postpartum information is available. Examinations were usually made at the time of discharge (from the fourteenth to the eighteenth day after delivery) and again from six to eight weeks post partum, but the records are not entirely complete. There are notes on 298 discharge examinations with forty-seven retroversions, an incidence of 16 per cent, while among 281 final examinations the retroversions totaled seventy-two (26 per cent). Fifty-four of the sixty-two patients with a retroversion seen in early pregnancy were followed to term and after delivery, with eighteen (37 per cent) of forty-eight showing retroverted uteri at the time of discharge, and twenty-eight (60 per cent) of forty-seven having a retrodisplaced uterus at the final examination. For the entire group, there were nineteen per cent retroversions at the time of discharge and 30 per cent at the final examination. It is unfortunate that examinations were not made at later dates to determine whether these new positions of the uterus were permanent.

In the entire series of patients, including those who were first seen after the third month of pregnancy, the incidence of retropositions was almost exactly the same, 20 per cent at discharge (1,103 examinations) and 30 per cent at final examination (950 patients).

If it is assumed that congenital retroversions are present to the extent of 20 per cent in any series of patients, it would appear that during the first two months after delivery there had appeared not more than 10 per cent of retroversions acquired as the result of the delivery. It is my feeling, however, that in many patients the position of the uterus is not permanent and that the organ is likely to be forward or back depending on factors which are not adequately known. With this idea in mind I studied the records of 100 patients through two consecutive pregnancies, noting the position of the uterus on the various examinations. Table 4 shows the results obtained from this study and indicates that my suspicion was correct. The lower portion of the table illustrates variations in uterine position noted at different times in two gestational cycles in a few patients. It should be remembered that in none of these patients were steps taken to affect the position of the uterus, but that the changes noted were due entirely to normal factors of which nothing is generally known.

TABLE 4.—*Position of the Uterus in One Hundred Patients Observed in Two Pregnancies*

Examination, First Admission						Examination, Second Admission					
Pregnancy, 1 to 3 Months		Discharge, 2 Weeks		Final, 4 to 6 Weeks		Pregnancy, 1 to 3 Months		Discharge, 2 Weeks		Final, 4 to 6 Weeks	
Number	Retroverted, per Cent	Number	Retroverted, per Cent	Number	Retroverted, per Cent	Number	Retroverted, per Cent	Number	Retroverted, per Cent	Number	Retroverted, per Cent
23	30	85	24	86	37	28	21	86	7	67	33

INDIVIDUAL CASES

First Admission						Second Admission					
Pregnancy	Mo.	Discharge	Days	Final	Days	Pregnancy	Mo.	Discharge	Days	Final	Days
?	3	Retroverted	39	Retroverted	34	Anterior	3½	Anterior	15	Retroverted	40
Retroverted	2	Anterior	16	Anterior	30	Anterior	2	Retroverted	25	Retroverted	45
Anterior	2	Anterior	23	Anterior	54	Anterior	2 3	Anterior	14	Anterior	56
Anterior	2	Anterior	17	Anterior	42	Not examined early		Anterior	13	Retroverted	35
Anterior	3	Anterior	14	Retroverted	71	Retroverted	2	Anterior	14	Anterior	37
Retroverted	2	Retroverted	16	Retroverted	33	Anterior	4	Anterior	15	Anterior	39
Anterior	3	Anterior	16	Retroverted	35	Anterior	2	Anterior	17	Anterior	40
Retroverted	2	Retroverted	23	Retroverted	39	Anterior	2	Anterior	15	Not examined	

TABLE 5.—*Discharge and Final Examinations of Eight Hundred and Fifty-Four Patients*

Position of Uterus	Number	Per Cent
Anterior on discharge and anterior on final examination	502	58.8
Anterior on discharge but retroverted on final examination	174	20.4
Retroverted on discharge and retroverted on final examination	85	10.0
Retroverted on discharge but anterior on final examination	93	10.9
Total	854	100.1

Both discharge and final examinations were made of 854 patients in the whole group, and the data obtained from these records emphasize the same fact (table 5). It should be noted that in 11 per cent of these women the uterus was retroverted at the end of two

weeks but had resumed its anterior position at the end of two months without the aid of correctional procedures. On the other hand, 12.7 per cent of the patients showed the uterus anterior at discharge and retroverted on final examination. No adequate explanation for these variations is available, although postpartum uterine involution undoubtedly plays a prominent part.

A history of previous suspension of the uterus was obtained from thirty-six patients in the entire series, seventeen of them being primiparas. Among these thirty-six women there were two who had spontaneous complete abortions, one on whom a therapeutic abortion was done and two who were cared for elsewhere, leaving thirty-one who were delivered under my supervision. With one exception, the uterus was anterior when the patient was first seen (thirteen were examined before the twelfth week of gestation), but among twenty-six patients with records of discharge examinations there were three (11 per cent) retroversions, and at final examination five (20 per cent) of twenty-five patients had retrodisplacements. In three patients it was noted that the uterus was fixed to the abdominal wall, but this fixation had not interfered with the course of labor. It was impossible, in the majority of these patients, to determine the type of operation performed and no analysis on this basis was attempted. The records show, however, that all recurrences were in those patients who were operated on as nulliparas and who therefore probably had "congenital" displacements. The series is too small to justify conclusions, but this relationship may be significant in indicating that the fundamental factor leading to the retroposition is not removed by the usual type of suspension operation.

TABLE 6.—*Thirty-Six Pregnancies after Uterine Suspensions*

Spontaneous abortion	2
Therapeutic abortion	1
Delivered elsewhere	2
Delivered—Premature and term	31
Uterus retroverted on final examination (30)	5 (20%)

CONCLUSIONS

1. Retrodisplacement of the uterus is not a common cause of sterility, as is indicated by the frequency of this more unusual position of the uterus in early gestation.

2. Retrodisplacement of the uterus apparently increases slightly the risk of early abortion, but manual replacement of all retroverted pregnant uteri adds an equally great risk of interruption of the pregnancy.

3. Retrodisplaced pregnant uteri almost invariably are replaced spontaneously during the first four months of gestation. Uncomplicated retropositions rarely cause symptoms of any moment.

4. The incidence of postpartum retroversion varies so greatly that it is impossible to estimate the value of any prophylaxis. At most, acquired retroversions account for no more than one third of the retrodisplacements seen in parous women.

5. The position of the uterus is largely determined by factors over which obstetricians have little if any control. Postpartum retroversions should not be held to be the fault of the obstetric attendant.

6. The operative correction of congenital retrodisplacements is likely to be nullified by delivery.

University Hospital.

ABSTRACT OF DISCUSSION

DR. ALBERT MATHIEU, Portland, Ore.: Dr. Plass has told a group of obstetricians and gynecologists that retrodisplacement of the uterus is inconsequential even in pregnancy and in the postpartum period. Such a radical departure from our old concepts is almost like telling a group of children that there is no Santa Claus. Nevertheless, I am sure we are all old enough to know the truth. The truth in such a matter can be ascertained only by a study such as Dr. Plass has made, and such studies can be made only by men as capable, honest and fearless as Dr. Plass has shown himself to be. We are all aware that the displaced uterus as a cause of symptoms is losing caste, and that this condition in a woman who is somatically wrong is only a minor detail and only a part of her symptom complex. I would as soon remove, by excision, one of twenty tuberculous glands in a tuberculous patient as to suspend the uterus of a woman whose retrodisplacement is only a part of her congenital maldevelopment. Nevertheless, we must face the problem squarely. In a series of cases as large as that presented by Dr. Plass, I have seen four abortions in the beginning of the fourth month in which I was certain that the sole cause was an impaction of the growing uterus in the hollow of a deeply concave sacrum; also, while using every routine effort to restore the retrodisplaced pregnant uterus to its normal position, I have never known the procedure to have even suggested itself as a cause of abortion. I am sure that we have all seen the type of case in which, on examination before pregnancy the uterus is found in normal position, and throughout pregnancy the uterus remains in normal position, but in which, after delivery, one finds the uterus retrodisplaced and apparently causing symptoms. When it is restored to an anterior position bimanually or with postural exercises, it remains in that position and the symptoms are relieved. Again, we should not lose sight of the fact that the retrodisplacement might be the last straw that breaks the camel's back in causing abortion. I am still firmly convinced that there is such a condition in an otherwise normal woman which might be termed an actual dislocation of the fundus of the uterus due to trauma of the uterine supports—a condition which does cause symptoms and which is relieved by manual replacement, pessaries and positional exercises.

DR. FRANK W. LYNCH, San Francisco: There has existed in the literature, from the beginning of time, the superstition that incarcerations of the uterus may be expected when pregnancy develops in a retroposed uterus. This bugaboo has been dispelled. In company with a great many others, I have sought for years to see an incarcerated retroposed uterus in the fourth month of pregnancy. While I have seen some operated on, I have never seen one that I believe would have been incarcerated unless it was bound down by adhesions. Dr. Plass shows us that there may be expected in pregnant women who appear to be normal from 6 to 10 per cent of abortions. Dr. Polak and Dr. Stacy have shown that retroversions of the uterus may be found in 20 per cent of nonparous women. It is interesting, therefore, to hear of Dr. Plass's incidence of 14 per cent of retroposition in pregnancy. It has been shown that pregnancies may cause retroposition from implantation on the posterior wall of a uterus that has hitherto been in a normal position. That type of case may be expected to correct itself subsequent to delivery unless there has been much trauma and laceration in the pelvic perimetrium, which contains the fascia which gives it support. This paper suggests the need of following obstetric patients, making sure that they have care before and after delivery, because only through this means may we avoid operations which are now in common vogue.

DR. HENRY P. NEWMAN, San Diego, Calif.: I object to the use of the words, "congenital retrodisplacements." In all probability, such conditions are developed at puberty, or prior to puberty, and not as stated by the author. An explanation is apparent to all of us when we study the attitude and the habits of the young woman of today, and possibly of earlier days as well. There are probably no real statistics. They would be difficult to obtain, but it is apparent to those doing work along these lines that the explanation lies in the habit of

life and the posture of the young woman at, or prior to, the age of 12.

DR. JOHN O. POLAK, Brooklyn: I disagree with Dr. Plass on several points. However, my experience agrees with his. I have never seen a case of incarcerated retroversion of the uterus, or so-called incarcerated retroversion, which did not become adjusted spontaneously during pregnancy. I had perhaps falsely attributed this to the fact that it has been a custom in our private work, as well as in our clinic work, to teach every woman the knee-chest position from the beginning of pregnancy, and to teach her how to assume the knee-chest position properly. Every time that patient makes an antepartum visit, the nurse says, "Will you get in the knee-chest position and show us how you do it?" We teach the patient how to open the vulva and let the air in, and we believe this has had a material influence on the rapid replacement of uteri which otherwise might have been incarcerated. Another point is that postpartum retroversion is an actual entity. As Dr. Plass has shown, many of these women are discharged on the fourteenth day with an anteverted uterus. Yet if one examines them at the end of four or six weeks, one will find a very large proportion of retroverted uteri. Our own experience was 38 per cent until we introduced corrective exercises. I want to call attention, particularly, to the use of exercise from the time the woman is confined, good retraction and contraction of the uterus being first secured by the Fowler posture and the ice bag, and by turning the patients over on their abdomens. Then, as soon as the lochia ceases to be red, these women should be taught the knee-chest position, and after they are out of bed they should be taught to walk on all fours. We have been able to reduce the incidence of retroversion from 38 per cent following labor, at the end of the fourth, sixth and eighth weeks, to 2 per cent by these postural exercises.

DR. CARL HENRY DAVIS, Milwaukee: Some years ago I checked up on all the patients who had reported to me during the first trimester and found that approximately 15 per cent had a retrodisplaced uterus. At the time of discharge, six or more weeks after delivery, approximately 15 per cent had a retrodisplacement. It was observed that they were not entirely the same group of women. In view of the fact that Dr. Polak and Dr. Stacy each have found that approximately 20 per cent of all nulliparous women have retrodisplaced uteri, are we to judge from the figures of Dr. Plass that there may be a certain degree of sterility among this group of women, since why else should there be approximately 20 per cent of women with retrodisplaced uteri if there is not some sterility associated with this condition? Of course, Dr. Plass is talking entirely of uncomplicated retrodisplacements of the uterus, and many of the other 5 per cent may have complicated conditions which result in sterility. Operations for retrodisplaced uteri are considered only in the complicated, symptom-producing cases.

DR. E. D. PLASS, Iowa City: My paper was presented with the idea of provoking discussion, since the views expressed are so contrary to those ordinarily held. I apologize for the word "congenital." I have used it because I know of no other term commonly employed which expresses the idea I had in mind. In the paper the term is enclosed in quotation marks. In order to arouse greater skepticism, I have taken the very radical point of view that, since the uterus is an organ which is movable under changing conditions, of which we know little, any attempt to evaluate the effect of correctional exercises, such as Dr. Polak has described, is difficult. I am heartily in favor of exercise during the postpartum period and believe it will prove beneficial generally to obstetric patients, but I am still doubtful as to whether it will affect the position of the puerperal uterus. If we agree that the uncomplicated retroversion is not a pathologic condition, why should we worry about the position of the uterus? I cannot answer Dr. Davis' question as to why there are only 14 per cent of retroversions in early pregnancy as against 20 per cent in nonpregnant women without pelvic disease. It may be that the 6 per cent represent those uteri which had replaced themselves before the end of the twelfth week of gestation, since the time at which spontaneous reposition takes place is subject to wide variations. On the other hand, the 6 per cent may represent the cases of sterility that are due to the position.

Clinical Notes, Suggestions and New Instruments

IMPROVED BREAST AND ABDOMINAL BINDERS FOR MATERNITY PATIENTS

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The maternity binders used at present in most hospitals, although efficient, have certain inherent objections. First, they are difficult to put on. Secondly, it takes a long time to adjust them properly. Next, the nurses often stick their fingers, and occasionally the patient, with safety pins when applying the binder. After the binder has been beautifully put on by the nurse, the doctor comes along and takes it off, and another ten minutes is required to replace it. Lastly, the abdominal binder never stays below the hips but has a tendency to roll up on the abdomen.

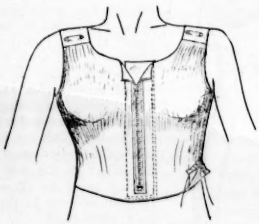

Fig. 1.—Breast binder.

In order to overcome these defects, the binders described here were devised.

AN IMPROVED BREAST BINDER

The binder is made of preshrunk ordinary unbleached muslin and comes in two sizes, small and large. It is cut along the regulation pattern. The following is a description of the large size: Ten inches from the left front edge (as it appears when placed on the patient) there is a "hookless fastener" 14 inches long with a 3 inch flap underneath. Along the same left edge there is a row of corset eyelets; 4 inches from the under free edge of the binder there is another row of corset eyelets. The 4 inch flap serves to protect the underlying skin.

The large size is suitable for patients weighing about 150 pounds (68 Kg.). The small size (which measures 2 inches smaller all around) is suitable for patients weighing about 100 pounds (45 Kg.).

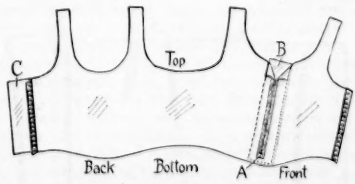

Fig. 2.—Details of breast binder: *A*, hookless fastener, 14 inches long; *B*, 3-inch flap underneath; *C*, 4-inch flap.

The binder is slipped under the patient so that the hookless fastener lies in front in the midline and the eyelets are on the left side. The eyelets are threaded with regular corset laces and the binder is drawn up as firmly as necessary. The shoulder straps are pinned with safety pins.

The advantages of this binder are:

1. It is easily applied.

2. The binder is put on by the nurse but once a day. Her time is available for other duties more important than sticking safety pins.

3. The binder is quickly opened by means of the fastener and the breasts are readily delivered for nursing by the patient without any outside aid.

AN IMPROVED ABDOMINAL BINDER

The abdominal binder is made of preshrunk ordinary unbleached muslin and comes in two sizes, small and large. The large size measures 20 inches wide by 42 inches long. Six inches from one edge there is a hookless fastener 18 inches long extending from the top of the binder to within 2 inches of the bottom, as illustrated in figure 3. There is a flap 4 inches wide underneath this fastener to protect the skin. On the left side (when fitted to the patient) there is a row of regular corset eyelets extending the entire width of the binder. Six inches from the under free edge of the binder there is another row of corset eyelets extending the entire width. The 6 inch flap serves to protect the underlying skin. Six inches to the right of the hookless fastener (when fitted to the patient) there is a set of corset eyelets 8 inches long extending from the upper end of the binder. This set is stitched 6 inches apart, the object of the wide spacing being to allow for conformation to the body when laced.

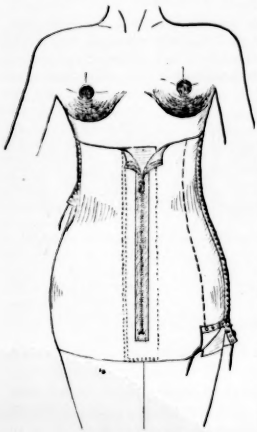

Fig. 3.—Abdominal binder.

The large size will fit patients weighing 150 pounds or more. The small size (which measures 4 inches smaller all around) is suitable for patients weighing about 100 pounds.

The binder is slipped under the patient's back so that the "hookless fastener" [1] lies in front in the midline and the eyelets are on the left. Regular corset laces are then threaded through both sets of eyelets and drawn as tight as necessary to form a well fitting, snug, supporting binder.

The advantages of this binder are:

1. It is easily and quickly put on.
2. It is easily adjusted so as to fit as tightly as desired.
3. It is long enough to "stay put" below the hips and thus help keep the thighs together. This aids in the healing of perineal repairs.

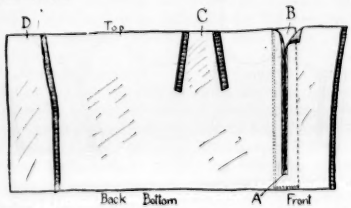

Fig. 4.—Details of abdominal binder: *A*, hookless fastener, 18 inches long; *B*, 4-inch flap underneath; *C*, corset eyelets, 8 inches long; *D*, 6-inch flap.

4. By means of the hookless fastener, the binder is quickly opened and the abdomen readily examined.
5. It takes but a moment to close the fastener and a snug binder is back in place.
6. The nurse does not stick her fingers with safety pins.
7. It makes a neat appearing binder.
8. The procedure is time saving.

1133 Park Avenue.

1. The fastener may be obtained from the Hookless Fastener Company, 393 Seventh Avenue, New York.

Special Article

SERUM DISEASE AND SERUM ACCIDENTS *

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This report was prepared at the request of the Council on Pharmacy and Chemistry. The Council considered the report, approved it, and authorized its publication.

W. A. PUCKNER, Secretary.

A little more than forty years ago, Hericourt and Richet established the principle of passive immunization. They demonstrated that the blood of an animal immunized by repeated injections of a micro-organism contains something which protects an otherwise untreated animal against infection by the organism used to immunize the first animal. The discovery of this important principle of passive immunization prepared the way for the production of diphtheria antitoxin in 1890 by von Behring and for all the other therapeutic serums and antitoxins which have been offered to the medical men of the present generations. The prophylactic or therapeutic value of a few of these serums is beyond question; of some, the most that can be said is that they are probably of some value; of many others, that they are probably of no value.

These widespread and numerous efforts to produce curative serums have created entirely new problems in the treatment of infectious disease—problems suggested by the title of this paper.

Perhaps it is unnecessary to point out the distinction between serum disease and serum accidents but, to avoid any possible misunderstanding, we wish to make it clear that in this paper the term serum disease or serum sickness refers to the clinical and immunologic phenomena which occur in an individual who, prior to the administration of serum, is not hypersensitive to the foreign serum administered. It is the usual, or perhaps one might say the normal, response of man to the parenteral introduction of foreign serum. Serum accidents, on the other hand, are the sudden, often alarming, or even fatal reactions of individuals who are hypersensitive to the serum employed. Slight degrees of hypersensitiveness or small doses of serum yield instances of intermediate types of response—serum disease with a shortened incubation period or mild serum accidents. Strictly speaking, it might be argued the term serum disease should include all types of reaction to the injection of foreign serum—both early and late manifestations, severe and mild, the reactions of hypersensitive and nonsensitive individuals—but custom and the practical importance of keeping in mind the distinction between the dangerous and the nondangerous forms of reaction to serum justify the use of the two terms. Since it is an almost universal custom to use the horse for the production of antiserums, the problem is confined to a consideration of the differences in response to horse serum of the hypersensitive and the nonsensitive individuals. The specific antitoxic, opsonic, lytic or agglutinating properties of the serum

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do not enter into the problems of serum disease and serum accidents. In recent years, purified or concentrated serums have come into fairly general use and there have been at times intimations in commercial circulars that such serums would not cause serum disease. It should be clearly understood that these concentrated serums still contain horse serum proteins capable of causing all types of serum reactions. The smaller doses used when concentrated serums are administered reduce but by no means abolish the incidence of serum disease; and furthermore, these preparations are capable of causing severe or even fatal serum accidents in individuals highly sensitive to horse serum.

INCIDENCE

Numerous factors doubtless influence the incidence of serum disease to a slight extent. Differences in individual susceptibility are apparent when one studies a group of patients treated with foreign serum. A small proportion (approximately 10 per cent) have no detectable manifestations of serum disease even if very large amounts of serum are administered. These are the individuals who are constitutionally insusceptible to serum disease. There is also a difference in racial as well as in individual susceptibility. North American Indians and negroes appear to have a relatively low susceptibility compared to that of the white race. For some entirely obscure reason, the serum from some horses causes more serum disease or more severe symptoms than the serum of other horses. The one factor, however, which determines the incidence of serum disease more than anything else is the quantity of serum administered. The published figures on the incidence of serum disease in patients treated with serum vary over a wide range, largely because of differences in the quantity of serum used. When such small amounts as are commonly used to immunize with diphtheria antitoxin are employed, a large percentage of the patients have no obvious manifestations of serum disease; but when, as in the use of antipneumococcus type I serum, quantities of from 100 cc. to 1,000 cc. or more are injected, a very small percentage of patients escape at least some distinct evidence of serum disease. In a series of 100 consecutive patients with lobar pneumonia treated with serum at the Presbyterian Hospital, New York, 93 per cent developed symptoms of serum disease. Weaver's [1] report furnishes the most satisfactory evidence on the relation of the amount of serum to the incidence of serum disease. He found that 10.9 per cent of patients receiving from 1 to 9 cc. of serum, and 100 per cent (eight patients) of those receiving from 170 to 280 cc. of serum, developed serum disease. Intermediate quantities of serum produced intermediate percentages of patients developing serum disease.

Whether other factors, such as the age of the patient, the disease for which the serum is given or the route of administration, affect the incidence of serum disease is uncertain; but any effect which they may have must be of relatively small numerical importance.

INCUBATION PERIOD

Individuals treated with serum for the first time usually have an incubation period of from six to twelve days before the onset of the symptoms of serum disease. In rare cases the incubation period may be two or even three weeks. In a few cases also the incubation period is less than six days. In such patients it is not always possible to exclude the possibility of a previous and forgotten injection of serum, as might readily occur after an immunizing dose of diphtheria antitoxin in childhood; and it is well established that a serum injection weeks or months or years before the second injection is very apt to cause a shortening of the incubation period.

SYMPTOMATOLOGY OF SERUM DISEASE

We need not describe in detail the familiar symptoms of serum disease. The diagnosis rarely presents any difficulty. There is, of course, a very wide range in both the intensity and the duration of the symptoms. A striking skin eruption consisting usually of urticaria, or a combination of urticaria and erythema, is the most conspicuous symptom. This eruption may at times be scarlatiniform, morbilliform or even in rare cases purpuric. The superficial lymph nodes are usually enlarged, the spleen occasionally. Arthritis is a frequent accompaniment and in a small percentage of cases is very painful. Boots and Swift [2] have shown that the joint fluid in the arthritis of serum disease is very similar to the joint fluid of rheumatic fever. About 30 per cent of the patients with serum disease have fever. Some show only a slight elevation in temperature for a day or two. Occasionally the patient may have a temperature of from 102 to 104 F. for from twelve to fourteen days. Edema occurs in about one third of all the cases, and it has the distribution of nephritic edema. With the edema there is chloride and water retention, a lowered phenolsulphonphthalein excretion, diminished volume output, albuminuria and cylindruria, with rarely, if ever, a demonstrable nitrogen retention. The impaired renal function is, so far as we know, always transitory.

In severe cases, a temporary optic neuritis may occur. Blood counts are not very characteristic. Pirquet and Schick,[3] in their study of serum disease in children, found that during the incubation period there is a leukocytosis which, with the development of symptoms, is succeeded by a leukopenia caused by diminution of the polymorphonuclear cells. In adults, such changes are rarely observed. Many cases, even at the height of severe symptoms, show no alteration either of the total or of the differential count. Occasionally one sees a leukocytosis of from 12,000 to 15,000; and a few cases show eosinophilia toward the end or after the disappearance of symptoms. Infrequently such symptoms as abdominal pain, vomiting, diarrhea, stupor, headache, conjunctivitis and sore throat occur during serum disease without any associated condition to which they can be attributed. It is not uncommon to see patients who, after a typical serum sickness has subsided, continue to have an unexplained fever for a few days. Since, in such cases, the patient has just passed through an infectious disease, it is rarely possible to rule out with certainty some complication of the infectious disease as a cause of the elevated temperature rather than the serum disease. However, the unconfirmed suspicion remains that sometimes fever of this kind may be due to a foreign serum.

There is, then, a syndrome which should be readily recognized: an interval, following the serum injection, of from six to twelve days without symptoms and then urticaria, erythema, enlargement of lymph nodes, arthritis, fever, edema and, in some cases, enlargement

1. Weaver, G. H.: Serum Disease, Arch. Int. Med. **3**: 485 (June) 1909.

2. Boots, R. H., and Swift, H. F.: The Arthritis of Serum Sickness, J. A. M. A. **80**: 12 (Jan. 6) 1923.

3. Pirquet, C. F., and Schick, Béla: Die Serumkrankheit, Leipzig and Vienna, Franz Deuticke, 1905.

of the spleen. Numerous reports [4] have appeared, particularly in the French literature, of polyneuritis and paralysis, usually of the Duchenne-Erb type, occurring during the course of, or subsequent to, serum disease. Tetanus antitoxin has been the serum used in most of these cases. We have never observed sequelae of this type after serum treatment.

RELAPSES

From both the immunologic and the clinical points of view, the occurrence of relapses is interesting. It has been shown that, with purified diphtheria antitoxin containing the isolated pseudoglobulin, relapses in serum disease do not occur. It has also been shown that animals become sensitized first to the globulin and later to the albumin of the serum; [5] and it seems highly probable that the first outbreak of symptoms represents the reaction to globulin and the relapse the reaction to the albumin. The exanthem of the relapse is less likely to be predominantly urticarial; more often it is erythematous or morbilliform. We have seen one case in which a diagnosis of measles was made because the patient had passed through the typical serum disease and a week later developed a morbilliform eruption. The interval between the two periods of symptoms may be as much as two weeks.

THE MECHANISM OF SERUM DISEASE

With regard to the immunologic changes which have been shown to occur following the injection of serum in a previously nonsensitive individual, it has been repeatedly demonstrated that, following the injection of therapeutic serums, precipitins for horse serum appear in the circulation somewhere between the ninth and the twenty-first day. It is also easy to demonstrate that the horse serum remains in the circulation for two or three weeks.[6] The available facts indicate that, following the administration of horse serum, the body cells begin to produce precipitins for horse serum and that for about nine days the precipitin is exclusively intracellular. At the end of the incubation period, usually from six to nine days after the serum injection, the concentration of precipitin in the cells is sufficiently high to react with the horse serum still in the circulation and, as a result of this, symptoms of serum disease appear. With the continued production of precipitin by the body cells an excess is formed, which passes from the cells into the circulation, and it then becomes demonstrable in the patient's serum. As the titer of the precipitin increases, the amount of horse serum remaining in the circulation decreases. In severe serum disease, the titer of precipitin is usually high and there is a rapid disappearance of the horse serum. Hence, those individuals who constitutionally possess the capacity of producing a high titer of precipitin are apt to have a severe serum disease and an early disappearance of horse serum from the circulation.

At the other end of the scale are those individuals already mentioned who have no serum disease even if amounts of serum up to 1,000 cc. are administered. In them it has been found that precipitin does not occur, or occurs only in very low titer for a short period, and the horse serum continues to be present in the circulation for many weeks, and perhaps months.

4. Weissenbach, R. J., and Decyfus, G.: Les accident sérique, Paris, Gaston Doin, 1927.

5. Dale, H. H., and Hartley, P.: Anaphylaxis to the Separated Proteins of Horse Serum, Biochem. J. **10**: 408, 1916.

6. Longcope, W. T., and Rackamann, F. M.: The Relation of Circulating Antibodies to Serum Disease, J. Exper. Med. **27**: 341 (March) 1918. Mackenzie, G. M., and Leake, W. H.: The Relation of Antibody and Antigen to Serum Disease Susceptibility, ibid. **33**: 601 (May) 1921.

SERUM ACCIDENTS

Long before conceptions of anaphylaxis and hypersensitiveness existed, pioneer investigators in methods of blood transfusion learned that severe and even fatal reactions might follow the parenteral introduction of sheep's or calf's blood into man. However, it was not until the advent of diphtheria antitoxin in 1890 that the significance of one form of such accidents was suspected. For a time after Behring's discovery it was thought that the specific antitoxin was responsible for these serum accidents. But the observations of Hubner and Johannsen proved quite conclusively that horse serum alone was equally effective, and the idea was discarded that the specific antitoxin had anything to do with the reactions.

We need not review in detail the evolution of the present conceptions concerning the mechanism involved in serum accidents. Richet's discovery of anaphylaxis, Pirquet's studies of allergy, Pirquet and Schick's demonstration that serum disease is a manifestation of immunologic phenomena, the rapid accumulation of knowledge of anaphylaxis from the studies of Otto, Rosenau and Anderson, Doerr, Weil, Besredka and many others, and in the last fifteen years the clinical and immunologic studies of hay-fever, asthma, eczema and serum disease have given us new bases from which to view the problem of serum accidents. We shall pass over the question of whether a serum accident is a manifestation of anaphylaxis. To us it seems that the weight of evidence supports the view that an antigen-antibody reaction is responsible for the phenomena of serum accidents, but this conception has not gained universal acceptance.

When the serum accident is mild, the only symptoms may be a few urticarial wheals, itching or prickling sensations and a feeling of uneasiness or apprehension. In more alarming cases urticaria and erythema are generalized and severe; there is cyanosis, dyspnea, edema of the face, tongue and throat, coughing, frothy expectoration and sometimes collapse. In rare cases death has occurred. The symptoms of serum accidents may come on explosively even before the injecting needle is withdrawn; cases are on record, however, in which a latent period of as much as thirty minutes has intervened between the injection of serum and the occurrence of symptoms.

A study of the literature of serum accidents brings out quite clearly that there are two groups of individuals susceptible to such accidents. The first group consists of those who have an immediate reaction when serum is administered to them for the first time. Some of these individuals are the well known "horse asthmatics"—people who have asthma or allergic rhinitis when they come near horses or enter a stable or even from contact with other people who have been close to horses. There is little information as to how these individuals have become sensitive to horse dander and horse serum. Many of them belong to families in which allergic diseases are frequent and we must assume that there is often an hereditary factor which makes them susceptible to the development of a specific hypersensitiveness to the fine epithelial dust cast off from the epidermis of the horse, and by means of the proteins of this dander hypersensitive also to the proteins in horse serum. At any rate we find some of these "horse asthmatics" almost unbelievably sensitive to horse serum. Death has occurred from 0.06 cc.[7] of serum

7. Boughton, T. H.: Anaphylactic Death in Asthmatics, J. A. M. A. **73**: 1912 (Dec. 27) 1919.

given intravenously to such an individual, and this despite the prompt use of large doses of epinephrine; as little as 0.5 cc. injected subcutaneously has caused almost immediate death. Of course, these "horse asthmatics" vary greatly in the degree of their hypersensitiveness and may be highly sensitive to the dander and only slightly sensitive to horse serum. It is this group which has provided most but not all of the deaths from serum accidents, and to such patients serum should be administered only with the utmost caution. Some of them probably cannot be given immunizing or therapeutic doses of the foreign serum. Belonging in this group of spontaneously sensitive individuals are those who have never received a serum injection and have never had symptoms from inhalation of horse dander but who are found by skin tests to react to horse serum. Some of them have had asthma from other substances; others have had no allergic symptoms whatever, but so far as the skin test can be relied on they are sensitive to horse serum. The available data indicate that they are in general less susceptible to severe serum accidents than the genuine "horse asthmatic."

The second group consists of those individuals whose sensitiveness to horse serum has been produced by a previous injection of serum. With the constantly increasing use of immunizing and therapeutic doses of serum, this phase of the problem has become of great practical importance. How often is an individual sensitized by a previous small or large injection of serum? Is such an artificially produced sensitization ever of high degree? How dangerous is serum therapy for such individuals? How soon does such sensitization develop? How long does it last? How can it be detected? How can serum be administered to such an individual with greatest safety? These are questions constantly coming up wherever physicians and public health officers are making use of the contributions of immunology to preventive medicine and therapeutics. It has been shown by Hooker [8] that after the use of toxin-antitoxin in diphtheria immunization 27 per cent of children previously showing no skin reactions to horse serum develop positive reactions. Park [9] confirmed this observation, except that he found a somewhat smaller percentage showing skin sensitiveness after toxin-antitoxin than did Hooker, and he does not believe that toxin-antitoxin immunization creates dangers for subsequent serum therapy. Others (Stewart,[10] Gatewood and Baldridge,[11] Lathrop [12]) have reported severe reactions to serum in those previously immunized with toxin-antitoxin. No deaths have been reported of individuals sensitized in this way, so far as we are aware. It would be easy to exaggerate the danger from sensitization by toxin-antitoxin. There is certainly no evidence to indicate that one should hesitate to use it because of fear of sensitizing to horse serum. Subsequent serum therapy will probably always be possible, but a very small percentage may be sensitized to such a degree that later serum injections should be given in graded doses. The demonstrated fact that even the minute quantity (0.0001 cc.) of horse serum present in the standard dose of toxin-antitoxin causes the development of some degree of hypersensitiveness in many individuals is an added argument in favor of using such preparations as toxoid, which are entirely free from horse serum proteins. Commendable also are the suggestions which have been made to use some other animals for the production of the antitoxin used in the toxin-antitoxin mixture.

With those individuals who have received a previous prophylactic or therapeutic dose of serum, the situation is somewhat different. In such cases the sensitizing dose of serum has been much larger. Longcope and others have shown that these individuals nearly always became sensitized to horse serum. In 1924, Lamson [13] collected from the literature forty-one reports of sudden death after serum injections. Of these, eight patients had been sensitized by previous serum injections. The number of tragedies of this kind which have occurred without any report in the medical literature can only be surmised. The New York State Department of Health has on record four cases of fatal serum accidents occurring between 1921 and 1928; the registrar's office of the New York City Department of Health has records of nine cases occurring between 1923 and 1927. How many of these were second injection deaths and how many were in spontaneously sensitive patients is not clear from the records. In addition to the fatal cases there have, of course, been a large number of alarming serum accidents without death. Probably most physicians who have treated infectious diseases have seen patients who, on receiving a second serum injection after an interval of two weeks or more, promptly developed itching, urticaria or erythema, cyanosis, perhaps swelling of the lips or face, and dyspnea.

Any accurate idea of the frequency of these reactions is almost impossible to obtain, but to get some indication of their occurrence one of us recently wrote to 144 physicians in New York State outside the metropolitan district. Seventy-six physicians replied; thirteen had seen severe and alarming reactions; one had witnessed a fatal serum accident. The ratio of severe and fatal reactions to the number of serum administrations is obviously very small. Park [14] has estimated that one in 20,000 serum injections is followed by alarming symptoms and that one in 50,000 is fatal. Whether these figures are derived from hospital records or from physicians reporting their experiences in practice is not clear. From the records of reported cases and from numerous personal communications, we are inclined to believe that several points in connection with serum accidents are well established though not generally known: 1. Compared to the spontaneously sensitive "horse asthmatic" group, the individuals sensitized by a previous serum administration are in general much less sensitive to horse serum. 2. Fatal accidents have, however, occurred in both groups. 3. Only a very small percentage of those artificially sensitized reach a dangerous degree of sensitization. 4. In both groups the variation in the intensity of the sensitization covers a very wide range. 5. Minute quantities of horse serum parenterally introduced suffice in an important percentage of individuals to increase the reactivity of the individual to the horse serum administered. 6. Serum accidents due to hypersensitiveness are avoidable.

8. Hooker, S. B.: Human Hypersensitiveness Induced by Very Small Amounts of Horse Serum, J. Immunol. **9:** 7 (Jan.) 1924.

9. Park, W. H.: Human Hypersensitiveness to Whole Horse Serum or Serum Globulins Following Diphtheria Toxin-Antitoxin Injections: Its Importance, J. Immunol. **9:** 17 (Jan.) 1924.

10. Stewart, C. A.: Anaphylactic Reactions Following Administration of Serums to Children Previously Immunized Against Diphtheria, J. A. M. A. **86:** 113 (Jan. 9) 1926.

11. Gatewood, W. E., and Baldridge, C. W.: Tissue Hypersensitiveness Following Administration of Toxin-Antitoxin: Phenomenon of Arthus, J. A. M. A. **88:** 1068 (April 2) 1927.

12. Lathrop, F. W.: Sensitization to Horse Serum Following Toxin-Antitoxin Injection, J. A. M. A. **89:** 1602 (Nov. 5) 1927.

13. Lamson, R. W.: Sudden Death Associated with the Injection of Foreign Substances, J. A. M. A. **82:** 1091 (April 5) 1924.

14. Park, W. H.: Deleterious Effects from Serum Injections, Am. J. Pub. Health **18:** 354 (March) 1928.

An obvious deduction from all this is that the physician who gives a "shot of serum" to a patient merely because he is at the end of his therapeutic resources or in order to do something dramatic is doing something which may be far worse than doing nothing. Gatewood and Baldridge [11] have recently described a type of untoward reaction following serum injections in patients to whom serum had previously been administered which appears to be the human counterpart of the Arthus phenomenon. In these patients necrosis occurred at the site where diphtheria antitoxin was injected, the injection having been made during the course of serum disease. The necrosis does not seem to have been the result of an antitoxin with unusual toxicity.

THE PREVENTION OF SERUM ACCIDENTS

The prevention of alarming and tragic occurrences from the use of serum may properly be considered under two headings: (1) the identification of those who are hypersensitive to horse serum and an approximate estimate of the degree of sensitization; (2) the measures by which desensitization or an increase in tolerance may be attained.

A history of asthma and particularly a history of symptoms from contact with horses should put one on one's guard. However, a person may be highly sensitized to horse serum without being able definitely to incriminate horses and therefore any one subject to asthma or allergic rhinitis should be treated with caution.

One should inquire for a history of serum therapy. But even in the absence of previous symptoms of allergy and previous serum administration, the safest procedure is not to inject serum without first making a skin test. The technic, familiar to almost every one, is simple. After the skin of the forearm has been cleansed with alcohol, a very small quantity, not more than 0.05 cc. of a 1:10 dilution of the serum, is injected into the skin. Control tests with salt solution or normal human serum should be done at the same time. If at the end of from ten to twenty minutes the injection wheal has enlarged and a zone of erythema has formed around it, the reaction should be regarded as positive, provided the control tests have not behaved in a similar way. The size of the wheal and the breadth of the surrounding erythema give a rough measure of the degree of hypersensitiveness. In slightly positive reactions the wheal may measure only from 8 to 10 mm.; in strong reactions the wheal may be 3 or 4 cm. or more in diameter. Especially significant of a high degree of sensitization are the reactions in which the wheal shows projections like pseudopods extending out into the surrounding zone of erythema. The interpretation of mild and moderately strong skin reactions is not always easy. One may be misled if undiluted serum is used in testing the skin, because such serum, even in nonsensitive individuals, may cause a reddening of the skin at the site of injection. Dilution of the serum as described removes this difficulty.

Some physicians recommend the conjunctival test for determining hypersensitiveness to serum. This is performed by instilling one drop of a 1:10 dilution of serum into the conjunctival sac of the patient. The occurrence of hyperemia, swelling, itching or pain indicates a positive reaction. It is claimed that this method, being less sensitive than the cutaneous, rules out many pseudopositive reactions. Its simplicity is an advantage, but damage to the cornea may follow the acute inflammation. To prevent this, a few drops of epinephrine solution should be instilled into the conjunctival sac if the reaction is positive. No patient showing a positive eye test should receive intravenous serum without preliminary desensitization.

Unfortunately, it cannot be stated that there is an exact parallelism between the intensity of the skin reaction and the degree of sensitization, but there is at least some relationship between the two. A negative skin test does not entirely exclude the possibility of a severe reaction when serum is administered. Serious accidents have been reported when a cutaneous wheal was absent; nevertheless the test should not be omitted, as it is the best index of sensitivity. A reaction in which the infection wheal, although not forming pseudopods, increases in size and develops erythema which extends beyond the wheal, indicates some increase in reactivity, and treatment should be carried out with some of the precautions to be mentioned. The time required for the development of the skin reaction also appears to give a clue to the degree of sensitization. In general, it seems that the longer the interval between the injection of the diluted serum and the beginning of the reaction in the skin, the less the intensity of the sensitization; but on this question exact observations are lacking.

DESENSITIZATION

Suppose, then, that one is confronted with a genuine "horse asthmatic" ill with meningococcus meningitis, or a patient previously treated with antipneumococcus serum who shows a strong skin reaction to horse serum in the midst of a severe tetanus or diphtheria. The individual is clearly sensitized to horse serum and at the same time his life depends on the administration of horse serum in large amounts. What can be done to increase his tolerance to horse serum to such an extent that therapeutically effective quantities may be administered? Since the most effective methods at present available for human desensitization have been derived from animal experiments in antianaphylaxis, we shall consider first the methods and results of desensitization in experimental animals. If one takes a group of guinea-pigs and sensitizes them all intraperitoneally with the same dose of some protein, say horse serum, and after an interval of from fourteen to twenty-one days gives an intravenous injection with graded doses of horse serum, it will be found that above a certain dose all the animals die in acute anaphylactic shock, and below that dose all survive. Let us assume that dose to be 0.05 cc. If now we give some of the sensitized animals intravenous injections of 0.02 or 0.03 cc., they will show well marked symptoms of anaphylaxis but will survive. In half an hour or an hour they are lively and appear quite well. If one now again gives an intravenous injection of horse serum, it will be found that they tolerate without symptoms several times the dose that was previously lethal. They are desensitized or, as it is rather inappropriately called, antianaphylactic. The same result may also be obtained in other ways. If during the last few days of the anaphylaxis incubation period the animals are given repeated small doses below the threshold of symptoms, they become desensitized. Furthermore, if the intoxicating dose, even though sufficiently large to cause death if injected quickly into the veins, is given subcutaneously or very slowly into the veins, the animals will be desensitized. The rapidity with which the protein reaches the circulation is an important factor in determining its effectiveness in producing anaphylactic intoxication.

On the basis of experimental work of this type, it was first assumed that patients hypersensitive to horse serum could be desensitized by the same methods with equal certainty and completeness. Abundant clinical observations have falsified this anticipation. Nevertheless it is not uncommon to find the statement, even in recent textbooks, that a preliminary injection of 0.5 or 1 cc. of serum will desensitize the patient so that therapeutic amounts may be given. Such a procedure may suffice in an occasional patient who has only a low grade of hypersensitiveness, but it is quite inadequate for the large majority of patients with sensitization to horse serum. Unfortunately, desensitization in man cannot be attained with the rapidity, certainty or completeness characterizing the phenomenon of desensitization in laboratory animals. Compared to guinea-pigs, rabbits and dogs, man is less susceptible to artificial sensitization, and also less susceptible to desensitization. Nevertheless, the methods holding out the best hope of successful desensitization have been derived from methods effective with animals.

We have already emphasized the fact that in human hypersensitiveness there is a wide range of intensity, and therefore it is not possible to present any standard method applicable to all cases. In the presence of a history of symptoms from horses or a strongly positive skin test, the first injection of serum should be made subcutaneously and should not be more than 0.01 cc. If no untoward symptoms occur, the dose may be doubled every thirty minutes until 1 cc. is given. Then, after the usual interval, 0.1 cc. is given intravenously. At intervals of twenty minutes, the intravenous dose may be doubled until the required amount of serum has been given. In case any of the injections is followed by edema, urticaria, respiratory distress or any of the other symptoms of serum accidents, the same dose should be repeated after an interval of half an hour or an hour, depending on the severity of the symptoms. All intravenous injections should be made very slowly, and to facilitate slow administration, the serum should be diluted with physiologic solution of sodium chloride.

In case it is necessary to inject the serum intraspinally, the same procedure should be followed until a dose of perhaps 10 cc. has been tolerated intravenously; then that amount may be given with caution intraspinally. Of course, in patients not highly sensitized, particularly those whose sensitization has resulted from a previous serum treatment, this program may be shortened if no symptoms occur after the early doses. This may be done by more than doubling the amount of the preceding injection, and also by shortening the interval. At the risk of overstressing the obvious, we wish to reemphasize the rule that desensitization should never be attempted without having epinephrine at hand. It is highly effective in controlling the manifestations of serum accidents, and in case of need should be used repeatedly. Koch,[15] Tuft[16] and Mendeloff[17] have reported fatalities following what was called desensitization. In none of these cases was desensitization properly carried out. In one case 5 cc. was given subcutaneously and then five and one-fourth hours later 10 cc. intravenously. In another case graded doses were given from 0.5 cc. subcutaneously to 5 cc. subcutaneously, and then 30 cc. was given intravenously. Death followed. The first intravenous dose was six times the last subcutaneous dose. In another case, graded doses were given from 0.1 cc. intramuscularly to 5 cc. intramuscularly. Half an hour later 10 cc. was given intravenously and the patient went into collapse and died. A study of the reported instances of desensitization and failure of desensitization indicate that it is a good rule never to make the first intravenous dose in sensitive individuals more than one tenth of the last subcutaneous or intramuscular dose.

Finally, how much may one expect to accomplish by such methods of serum desensitization? An unqualified answer cannot at the present time be made to this question. There are probably a few individuals with extreme sensitization to horse serum who cannot be desensitized by any method, at least not to a point at which they will tolerate serum in therapeutically necessary amounts. One may occasionally find, too, that after a few desensitizing doses the patient gives a prompt reaction with disturbing symptoms, and that after waiting the proper interval the patient does the same thing again after the same dose. He seems to have reached his limit of desensitization. With persistence and caution it may or may not be possible to proceed to higher doses. The majority of patients, however, and probably nearly all of the artificially sensitized patients, after persistent and careful efforts, will become, for practical purposes, desensitized.

15. Koch, W.: Beitrag zur Kenntnis der Serumanaphylaxie beim menschen und deren Verhütung, Berl. klin. Wchnschr. **52**: 685, 1915.
16. Tuft, L.: Fatalities Following Reinjection of Foreign Serum, Am. J. M. Sc. **175**: 325 (March) 1928.
17. Mendeloff, M. I.: A Case of Fatal Anaphylaxis Following the Intravenous Injection of Antimeningococcus Serum, J. A. M. A. **82**: 1862 (June 7) 1924.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS APPROVED THE FOLLOWING REPORT.

H. J. HOLMQUEST, Secretary.

MULTIPLE NEBULIZER-IMPROVED ACCEPTABLE

The device known as "The Multiple Nebulizer-Improved," manufactured and submitted by the American Technical Laboratories, Glendale, Calif., is stated to be an apparatus that atomizes or nebulizes oils or other liquids. This device is so constructed that any such medicament can be administered alone or in combination with other medicaments without interruption of treatment. By means of a system of valves, the treatment may be rhythmically interrupted to any desired frequency.

The apparatus is equipped with an electrical heater which makes possible the administration of medicaments at any desired temperature.

The "Multiple Nebulizer" is also provided with a pressure gage, calibrated to read in ounces the pressure the patient is receiving.

The Council on Physical Therapy declares "The Multiple Nebulizer-Improved" acceptable for inclusion in its list of accepted physical therapy apparatus.

Indians and Venereal Disease.—I have heard the remark made a number of times by physicians who ought to know better that there was practically no venereal disease among the Navahos, the greatest tribe of Indians in the United States. Nothing could be further from the truth, and the only way I can explain such statements is either that these physicians have not come into extensive contact with adult Navahos or that they have not gone to the trouble of giving them thorough physical examinations, including blood tests. I am not in a position to give exact figures on the number of cases of gonorrhea and chancroid that have come to my attention during the past two years in caring for this people, although I may say that they have been frequent and included almost every aspect of these diseases. Syphilis is alarmingly frequent among them. —Pousma, R. H.: Venereal Disease Among the Navahos, *Southwestern Med.*, November, 1929.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 25, 1930

THE ETIOLOGY OF CARCINOMA

The accepted view of the cancer cell, that it is an anarchist living selfishly at the expense of the organized social group of cells that constitute the human body, has commended itself to medical philosophers the more readily because they dislike cancer as much as they dislike an anarchistic philosophy. At first glance the analogy seems faithful enough, but it must be admitted that it has not led to any fruitful understanding of the causation of this disease. Dr. H. E. Robertson[1] challenges the conception as misleading. He points out that an anarchist, in cellular structures just as in the body politic, should arouse some opposition. In the human body there is found not the slightest anatomic evidence of any defensive or resentful phenomena in the neighborhood of a cancerous growth. The proliferation of a malignant condition appears to Robertson therefore as the evidence of an evil "miasma" constantly at work, resulting in a slight perversion in the metabolism of the affected cells.

This conception is the result of many years of study of the polypoid masses occurring in the mucosa of the colon. Such masses Robertson finds present in fully 50 per cent of persons of more than 30 years of age. Although in the great majority of cases they never develop into carcinoma, every one of these polypoid masses shows a surprisingly large number of characteristics common to cancerous growth. Hyperchromatism, mitotic figures, irregular size and arrangement of cells and disorderliness of structure will be present to such an extent that it is hard to believe in the innocence of the growth. In those cases in which cancerous growths actually are present in the colon together with the polyps, there is no sharp line of differentiation to be drawn between the benign and the malignant neoplasms. Here is evidence, says Dr. Robertson, that an influence is exerted on the epithelium of the colon which in at least 50 per cent of adult human beings results in abnormal proliferation. The response to this influence varies, resulting perhaps in one or more polyps or a definite carcinoma or, in certain cases, in the production of multiple carcinomas arising one after the other, with such an overwhelming picture of so-called carcinoma diathesis that one must assume that no amount of surgery or radium can possibly save such a patient from a malignant death.

Whether this conception of cancer as the product of the physicochemical environment acting on a more or less susceptible cell is attractive or not, it is suggestive to those who are engaged in the baffling problem of research into the etiology of the disease.

1. Robertson, H. E.: Observations on the Growth and Spread of Carcinoma, Colorado Med. 27:4 (Jan.) 1930.

THE ALIMENTARY FATE OF LIGNIN

The fate of ingested food materials presents a problem of serious concern to the physician. If the digestive glands fail to supply a suitable quota of their secretions, the conversion of the digestible nutrients to products adapted for absorption may be interfered with. If the motor functions of the alimentary tract are impaired, the enforced stagnation of food residues may render them more prone to bacterial decomposition and thus afford an opportunity for the genesis of undesired products of fermentation and putrefaction that are more or less harmful. So long as both motor and secretory activities remain normal, the familiar nutrients such as the proteins, fats, starches, sugar, salts and vitamins are likely to disappear from the gastro-enteric tract with physiologic efficiency. The "coefficient of digestion" for such compounds is ordinarily excellent, so that more than 90 per cent are utilized and hence fail to reappear in the stools.

The mixed food of man usually includes substances that belong in a somewhat different category. Particularly in the case of edible products of plant origin—cereals, fruits, vegetables—there is a noteworthy content of more or less indigestible components which are currently referred to as "roughage" or "ballast." The chemist is likely to refer to this as "crude fiber" and ordinarily thinks of it as cellulose. The latter polysaccharide is extremely resistant to transformation in the human alimentary tract. There are no digestive enzymes that attack it, and cellulose is not readily subject to microbic change except under conditions of prolonged stasis. There are other polysaccharides, so-called hemicelluloses, including pentosans and galactans, of plant origin, that are almost as resistant to alimentary change. They form the basis of such substances as agar agar, "vegetable gelatin," psyllium seeds and other products which, because of their indigestibility and otherwise harmless nature, are eaten to promote laxation as a result of their residual bulk.

The behavior of such substances is all too little known. This applies conspicuously to lignin, which is a common ingredient of vegetable materials. In young plant cells the cell walls consist of almost pure cellulose,

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but as the plant grows older this becomes permeated with lignin. According to Thatcher,[1] the lignin material generally consists of two types of substances, one of which contains a closed-ring nucleus of unknown composition and the other is probably a pentosan. It has, indeed, long been suggested that lignin probably furnishes a phenyl radical involved in the formation of hippuric acid or benzoyl glycine. On the other hand, there are assertions that lignin passes unaltered through the gastro-enteric canal. Studies by Csonka, Phillips and Jones [2] at the Bureau of Chemistry and Soils point to an alimentary degradation of lignin. The experiments were conducted on both herbivorous and carnivorous animals and consisted in adding known amounts of lignin to the diet. There was uniformly an increase of hippuric acid in the urine as well as a decrease of the methoxyl group content—the decisive index—of the lignin eliminated in the feces. One must assume that lignin may to some extent be metabolized in the body, and presumably in the case of man as well as other related species. Where and how the disintegration takes place remains to be learned more precisely. The government experts believe that enzymes rather than bacteria are involved in the process. In any event it is high time that biochemists ascertain what actually happens to products that millions of persons eat naturally every day.

1. Thatcher, R. W.: The Chemistry of Plant Life, New York, McGraw-Hill Book Company, 1921.
2. Csonka, F. A.; Phillips, M., and Jones, D. B.: Studies on Lignin Metabolism, J. Biol. Chem. **85**: 65 (Dec.) 1929.

THE CENTRAL NERVOUS CONTROL OF SUGAR METABOLISM

In the classic piqûre experiments of Claude Bernard, reported in 1858, immediate effects of this procedure were an increase in the sugar of the blood and an excretion of sugar in the urine. These results led to the belief that sugar metabolism is controlled by a center situated in the medulla oblongata, in the floor of the fourth ventricle. Further work localized this center in a small area corresponding to the dorsal nucleus of the vagus nerve. The equally classic pancreatectomy experiments of von Mering and Minkowski, reported in 1889, established the fact that complete removal of the pancreas in the dog led to a severe disturbance of sugar metabolism similar in many respects to severe diabetes mellitus in man. Further experimentation localized the activities of the pancreas relative to sugar utilization in the islets that had been noted by Langerhans exactly twenty years previous to the experiments of von Mering and Minkowski. It proved also that transplantation of a piece of pancreas in the pancreatectomized dog into an area far removed from the field of normal nervous control of the pancreas would prevent the onset of otherwise fatal diabetes and offered convincing proof that the islets exercise their function through a hormone. Microscopic examination of the pancreas revealed the occurrence of lesions, often sharply limited to the islets, in many cases of clinical diabetes mellitus. In a small proportion of cases of human diabetes, pathologic changes are not found in the islets. The discovery of insulin and the substitution therapy of diabetes are too recent to require further mention.

With the relationship of the pancreas to diabetes established by the work of the last forty years, what has become of the sugar center? Physiologists have repeated the piqûre experiments of Bernard, with identical results. The occurrence of hyperglycemia and glycosuria associated with injuries, tumors and other lesions of the base of the brain has lent clinical support to the view that sugar metabolism may be controlled by a center or centers situated in the brain. Most of the piqûre experimentation has been limited to physiologic methods. Few workers have attempted any correlation between the physiologic effects of piqûre and histologic changes in the region of the supposed center. In 1920 and 1921, Brugsch, Dresel and Lewy [1] published the results of combined physiologic and morphologic studies of the piqûre experiment. Their observations were such as to suggest that the sugar center might mediate its effects through the pancreas. They found, as had Bernard and those who followed him, that piqûre causes a definite rapid increase in the blood sugar level. They located not one but two sugar centers in the floor of the fourth ventricle.. They asserted that the anterior or oral end of the dorsal vagus nucleus is a parasympathetic center that controls the activities of the pancreatic islets. Irritation of this center leads to stimulation of the pancreas and to hypoglycemia. Extirpation of the pancreas leads to secondary degeneration of the ganglion cells of the anterior sugar center. They held that the posterior or caudal end of the dorsal vagus nucleus is a sympathetic center, which sends its fibers by way of the jugular ganglion of the vagus and the superior cervical sympathetic ganglion and affects the blood sugar level by way of the suprarenal glands. Irritation of the posterior center leads to stimulation of the suprarenal glands and to hyperglycemia.

The work of Brugsch, Dresel and Lewy and the conclusions drawn from it have been critically reviewed by Hiller and Tannenbaum [2] and by Hiller and Grinker [3] of the University of Chicago School of Medicine. Hiller and Tannenbaum repeated the piqûre experiment and found that this procedure does actually cause an increase in the sugar of the blood. But they did what most previous investigators have failed to do: they

1. Brugsch, T.; Dresel, K., and Lewy, F. H.: Zur Stoffwechselneurologie der Medulla oblongata, Ztschr. f. exper. Path. u. Therap. **21**: 2, 1920; II. Ztschr. f. d. ges. exper. Med. **25**: 262, 1921.
2. Hiller, Friedrich; and Tannenbaum, Albert: The Nervous Regulation of Sugar Metabolism: I. Experimental Studies, Arch. Neurol. & Psychiat. **22**: 901 (Nov.) 1929.
3. Hiller, Friedrich; and Grinker, R. R.: The Nervous Regulation of Sugar Metabolism: II. Experimental Studies, Arch. Neurol. & Psychiat. **22**: 919 (Nov.) 1929.

studied experimentally the various factors which enter into the carrying out of the experiment and which might have an influence on the blood sugar curve. The ease with which alterations in the blood sugar level can be brought about in the rabbit, the animal usually used for piqûre experimentation, has been known. Ether anesthesia alone was found to cause a hyperglycemia almost as great as that of piqûre. This action is attributed to the pharmacologic effect of ether and not to any irritation caused by it. Excitement and pain, in the absence of anesthesia, also affect the blood sugar level. The flexed position of the head, necessary for the piqûre operation as generally performed, increases blood sugar, partly through asphyxia and partly through irritation. Any kind of an operative procedure has a similar effect. The combined effect of two or more of these factors acting at the same time was an additive one. Their effect is such as to invalidate most of the piqûre work previously done. Hiller and Tannenbaum finally devised a two-stage operation which eliminated almost entirely these extraneous factors. By serial microscopic sections it was found that the harm caused by the piqûre could be sharply limited to the dorsal vagus nucleus. Only a slight rise in blood sugar, which was no greater than that due to simple manipulation of the animal, followed such experimental procedures. Previous results obtained by piqûre, which were interpreted as indicating the presence of a sharply localized sugar center in the medulla, appear to have been rendered valueless by these carefully controlled experiments.

The experimental anatomic studies of Hiller and Grinker invalidate the previously made assumptions of nervous paths through which the supposed center in the medulla and believed to control sugar metabolism. Section of the vagus nerve below the superior laryngeal nerve or below the recurrent laryngeal nerve was followed by the retrograde reaction of primary irritation of practically all the ganglion cells of the dorsal nucleus. Section of the cervical sympathetic trunk was followed by no such reaction. Transection of the cervical spinal cord led to similar negative results. From these studies and their results the conclusion is drawn that all the fibers coming from the dorsal vagus nucleus pass downward in the vagus trunk, and that few or no vagal fibers enter the cervical sympathetic trunk directly or the thoracic or abdominal sympathetic trunks after having passed down in the spinal cord. Section of the vagus nerve, destruction of the dorsal vagus nucleus, or hemisection of the medulla above this nucleus was not followed in any case by retrograde changes in the ganglion cells of the between-brain. Such experiments disposed of any possible connections between a hypothetic sugar center in the medulla and superimposed centers at higher levels. From their physiologic and anatomic studies, the Chicago investigators are convinced that there is no definite center in the medulla which controls sugar metabolism through the sympathetic system. They believe that more careful experimentation will disprove the existence of other hypothetic metabolic centers, such as those for water, salt and fat metabolism.

Current Comment

ANNUAL DUES

In the December 14 issue of THE JOURNAL was inserted a colored slip for remitting 1930 Fellowship and subscription dues. Such slips have been used in previous years and have always had a highly gratifying response from Fellows and members. Payments this year have been far in excess of those in previous years and this fine cooperation has meant a great saving by eliminating the clerical labor, printing and postage necessary to send out personal bills. It is hoped that the great majority of Fellowship and subscription dues will be paid in this manner, and, for the convenience of those who have not yet remitted, another colored slip is placed in this issue of THE JOURNAL. Like the previous slip, it lists all of the special journals and *Hygeia*, and provides convenient space for entering subscriptions to any of these publications. Two or three minutes' time from each Fellow and subscriber who has not paid the 1930 dues will obviate the tremendous task and the heavy expense of sending out individual statements.

THE VOLATILE FATTY ACIDS OF THE FECES

Although the alimentary tract is sterile at birth, so that the meconium is free from bacteria, micro-organisms are introduced as soon as food finds its way into the bowel. Therefore, the gastro-intestinal canal remains the habitat of bacteria, which for the most part are harmless and which may even facilitate the disintegration and final absorption of ingested substances; occasionally the intestinal flora includes species that are undesirable if not actually noxious. By no means all of the products of alimentary bacterial decomposition are known. Some are identical with or analogous to products of normal enzymatic digestion. Others are characteristically different, among them the volatile fatty acids. The latter are undoubtedly derived in large measure from soluble carbohydrates rather than from amino-acids, which present another possibility of origin. Among the usual products of the breakdown of dextrose by bacteria are lactic, acetic and formic acids, alcohol, carbon dioxide and hydrogen. Some micro-organisms also give rise to butyric acid, possibly from lactic acid as an immediate precursor. Recent studies[1] in the department of internal medicine at Washington University School of Medicine, St. Louis, indicate that intestinal bacteria ordinarily ferment from

1. Olmsted, W. H.; Whitaker, W. M., and Duden, C. W.: Steam Distillation of the Lower Volatile Fatty Acids from a Saturated Salt Solution, J. Biol. Chem. **85**: 109 (Dec.) 1929. Olmsted, W. H.; Duden, C. W.; Whitaker, W. M., and Parker, R. F.: A Method for the Rapid Distillation of the Lower Volatile Fatty Acids from Stools, ibid., p. 115. Grove, E. W.; Olmsted, W. H., and Koenig, K.: The Effect of Diet and Catharsis on the Lower Volatile Fatty Acids in the Stools of Normal Men, ibid., p. 127.

1 to 4 per cent of ingested carbohydrates. Persons maintained on weighed diets eliminated in the stools from 60 to 300 per cent more lower volatile fatty acid on high carbohydrate than on high protein feeding. Catharsis produced at least 100 per cent increase in the output; hence it is not unreasonable to assume that some of the end-products of bacterial fermentation in the bowel are usually absorbed. The evidence secured by the St. Louis investigators indicates that acetic and butyric acids appear in amounts varying from 30 to 60 per cent each of the total volatile fatty acids in normal stools, formic acid being present in much smaller amounts, averaging 10 per cent. What physiologic effects, if any, these acid substances may exert on the motor or secretory functions of the intestine, or whether they affect the nerve endings of the lower alimentary tract so as to produce reflex manifestations, remains to be learned.

BACTERIAL AUTO-AGGRESSINS

The metaphor that the lytic principle responsible for the d'Herelle phenomenon is a living, self-propagating subvirus, actively parasitic on bacteria, has been popularly mistaken as proof of the existence of a new submicroscopic order of inframicrobic life. That we may here be dealing merely with a peculiar specific autolysin, "regenerated" or "released" in excess on the resulting dissociation or atypical autolysis of bacteria, has escaped popular attention. Yet this interpretation of the d'Herelle phenomenon is made by virtually all competent immunologists, a dozen variants of which concept have been proposed by them. The autolytic concept is apparently confirmed by recent chemical analyses by Krueger and Tamada,[1] of Stanford University, California. Krueger and Tamada counted the number of lytic "particles" in their purified, highly concentrated "bacteriophage" and made parallel determinations of the total nitrogen in this "'phage." Even without deducting the recognized noncoagulable nitrogen in their control tubes, the total 'phage-nitrogen was so small as to show that each lytic "particle" could not be of greater complexity than the average protein molecule. Unless the popular mind is willing to accept a single protein molecule as a living self-propagating biologic entity, it would contribute much to nonprofessional clarity if the "bacteriophage metaphor" were quietly discarded and replaced by a nomenclature offering fewer temptations to noncritical fantasy and commercial exploitation. The apparent multiplication of the d'Herelle autolysin under certain complex biologic conditions is, of course, not a unique phenomenon in immunochemistry. It has been pointed out by the other members of the Stanford University group that even ordinary horse protein may show such pseudoproliferation,[2] presumably due, in part at least, to "immunologically symmetrical proteolysis."[3]

1. Krueger, A. P., and Tamada, H. T.: The Preparation of Relatively Pure Bacteriophage, J. Gen. Physiol. **13**: 415 (Nov. 20) 1929.
2. Manwaring, W. H.; Azevedo, J. L., and Boone, T. H.: Do Foreign Proteins Multiply in the Animal Body? Proc. Soc. Exper. Biol. & Med. **27**: 13 (Oct.) 1929.
3. Sox, H. C., and Manwaring, W. H.: Immunologically Symmetrical Proteolysis, Proc. Soc. Exper. Biol. & Med. **27**: 72 (Oct.) 1929.

Association News

THE DETROIT SESSION

Special Exhibit on Fresh Pathology in the Scientific Exhibit—Guest Demonstrators

Announcement is made of the appointment of the Committee on Fresh Pathology Exhibit for the 1930 session of the American Medical Association. The committee consists of Drs. A. L. Arnolsch, assistant professor of pathology, Detroit College of Medicine and Surgery, Detroit; O. A. Brines, pathologist, Public Welfare Commission, City of Detroit; Joseph Casper, pathologist, Herman Kiefer Hospital, Detroit; J. E. Davis, director of pathology department, Detroit College of Medicine and Surgery, Detroit; P. L. Morse, pathologist, Harper Hospital, Detroit; Clarence I. Owen, director of laboratories, Grace Hospital, Detroit; Max Pinner, pathologist, William H. Maybury Sanatorium, Northville, Mich.; and C. V. Weller, professor of pathology, University of Michigan Medical School, Ann Arbor, Mich. Dr. Frank W. Hartman, pathologist and director of laboratories, Henry Ford Hospital, Detroit, has consented to accept the appointment of chairman of this committee.

The committee has organized and evolved a plan of securing both surgical and necropsy material from Detroit and Ann Arbor. The members of the committee representing different hospitals have generously placed at the disposal of the committee anything that may be of interest at the respective institutions. The members of the Local Committee on Fresh Pathology will also take part in various demonstrations throughout the session week except during the schedules for the guest demonstrators.

A new feature in connection with the Fresh Pathology Exhibit at Detroit will be the cooperation of the local demonstrators with guest demonstrators.

The guest demonstrators and their general topics will be as follows:

Dr. E. R. LeCount, Chicago, Pathology of the Brain.
Dr. William Ophüls, San Francisco, Pathology of the Kidney.
Dr. A. S. Warthin, Ann Arbor, Mich., Pathology of Syphilis of the Heart and Aorta.
Dr. Milton Winternitz, New Haven, Conn., Pathology of the Lungs and Blood Vessels.
Dr. Francis Carter Wood, New York, Pathology of Cancer.

Arrangements have also been made whereby the guest demonstrators will participate in a symposium in the Section on Pathology and Physiology on subjects analogous to those which will be the topics of the demonstrations in the Scientific Exhibit.

MEDICAL BROADCAST FOR THE WEEK

The American Medical Association Morning Health Talks and Evening Health Hints from Hygeia

The American Medical Association broadcasts daily at 10 o'clock, Central Standard Time, with the exception of Friday, when the health message is delivered at 9:45, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of January 27 to February 1 is as follows:

January 27. "The Functions of Food," by Dr. R. G. Leland.
January 28. "The Chemical Process of Nutrition," by Dr. R. G. Leland.
January 29. "The Chemical Process of Nutrition," by Dr. R. G. Leland.
January 30. "Magic Wands of Medicine," by Miss Mildred Whitcomb.
January 31. "Child Mental Health," by Miss Lois Stice.
February 1. "Universal Pasteurization Our First Objective," by Dr. J. M. Dodson.

Evening Health Hints from Hygeia, 8 o'Clock, Central Standard Time

January 27. Congestion of Cities Endangers Health.
January 28. Deafened Child's Health Needs Special Care.
January 29. Preparing Hot Lunches for School Children.
January 30. Ten Commandments for Boil Sufferers.
January 31. Street Work Deprives Boys of Sleep and Food.
February 1. Dairy Bureau Aids in Milk Sanitation.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Research in Medical History and Bibliography.—The University of California Medical School announces the organization of new activities in the field of medical history and bibliography, which includes instruction and research in these subjects and supervision of the development of the medical school library. The course was inaugurated, January 14. Dr. LeRoy Crummer, Omaha, has accepted an appointment as clinical professor of medical history and bibliography. Dr. Sanford V. Larkey is to be assistant professor of medical history and bibliography, effective July 1.

Hygiene on Board Ship.—Announcement has been made of a $5,500 gift by the Dollar Steamship Lines, Ltd., to the University of California Hooper Foundation for Medical Research for the investigation and control of communicable diseases with special reference to hygiene on board ship. Monthly instalments of $500 each will be paid, and the investigations will be carried on under the direction of Karl F. Meyer, Ph.D., director of the Hooper Foundation, and Dr. J. Casson Geiger, associate professor of epidemiology, University of California Medical School. The gift also includes the maintenance of a parasitologist on the staff. Two instalments were sent in with the letter of confirmation which make the gift retroactive for two months and cover the work done by the university during recent outbreaks of meningitis on board ships which touched at Chinese ports during an epidemic.

Society Acquires New Home.—The San Francisco County Medical Society has acquired the magnificent new home, at 2180 Washington, shown in the illustration. The building shown was purchased, with the ground, complete for $135,000.

In order to finance the purchase of the building, the dues of the society have been increased to $50 a year, to be paid quarterly in sums of $12.50 each quarter. Graduates of medical schools of three years or less are required to pay quarterly dues of $7.50. With this income, the society will be able to finance the building, paying the original cost and the operation. The property is estimated to have a value of more than double the amount paid for it by the society. The building is ideally adapted for the purpose, having space sufficient to accommodate meetings of more than 1,000, study rooms, library departments, kitchens and all of the other accessories for which construction costs are so great.

ILLINOIS

Report of State Laboratory Work.—Of the specimens examined by the laboratory of the state department of health in 1929, 88,939, or 68 per cent, were submitted for tests relating to syphilis and gonorrhea, and nearly 21 per cent were found to be positive. In the search for tubercle bacilli, more than 14,000 tests were made and nearly 16 per cent proved positive; 8,663 tests were made for the discovery of typhoid bacilli; only 968 cases of typhoid, however, occurred in the state. The tests are done by the state free of charge.

Society News.—Dr. Jean V. Cooke, department of pediatrics, Washington University School of Medicine, St. Louis, addressed the McLean County Medical Society, Bloomington, January 14, on "Specific Prophylaxis and Treatment of Infectious Diseases."——Dr. Isadore Pilot addressed the Rock Island County Medical Society, January 14, on "Bronchial Asthma-Allergy and Its Relations to Asthma."——The Vermilion County Medical Society was addressed at Danville, January 7, by Dr. Henry Schmitz, Chicago, on "Diagnosis and Treatment of Cancer."——Dr. Andy Hall, state health officer, Springfield, addressed the Jefferson-Hamilton County Medical Society, Mount Vernon, January 17, on some health problems in Illinois.——The Belleville branch of the St. Clair County Medical Society was addressed, Dec. 4, 1929, by Dr. Otto S. Krebs, St. Louis, on "Toxemia of Pregnancy."——The Christian County Medical Society and physicians of central Illinois were addressed, January 15, at Taylorville, by Dr. Quitman U. Newell, St. Louis, on treatment of cancer of the uterus.

Chicago

Decline in Birth Rate.—Although official figures are not yet complete, the birth rate for Chicago declined 1.6 per cent in 1929 as against that for 1928. The birth rate per thousand of population was 18.7 in 1928; the nearly complete figures show that it will be 18.4 for 1929. The reasons advanced to account for the declining birth rate were restricted immigration, spread of birth control information and changes in the standard of living.

Society News.—The sixth Ludvig Hektoen Lecture of the Billings Foundation was delivered before the Institute of Medicine of Chicago, January 24, by Dr. Albert V. Hardy, director, state hygienic laboratories, State University of Iowa College of Medicine, Iowa City, on "Undulant Fever." The institute will hold a joint meeting with the Chicago Pathological Society and the Society of Medical History of Chicago, February 17, at the City Club, to celebrate the fiftieth anniversary of the Chicago Pathological Society. Dr. Ludvig Hektoen will speak on "The Discovery of the True Nature of Acute Endocarditis," and Dr. Esmond R. Long, "The First Text of Pathology Published in America, the Treatise of Pathological Anatomy by William Edmonds Horner, 1829."——The Chicago Neurological Society was addressed, January 16, by Dr. Lewis J. Pollock on "An Abnormal Abdominal Reflex Producing Crossed Flexion of the Upper Extremity"; Dr. Ernest Sachs, St. Louis, "Review of Forty-Five Frontal Lobe Lesions," and Dr. Fritz Wittels, Vienna, Austria, "Psychoanalysis in Relation to Psychiatry."——G. W. Dyer, Ph.D., department of economics, Vanderbilt University, Nashville, addressed the Chicago Medical Society, January 15, on "Fundamental Americanism," and Dr. James S. McLester, Birmingham, Ala., January 22, on "Clinical Relations of Achlorhydria."

INDIANA

Personal.—Dr. Arthur B. Cray, Monticello, has been elected health officer of White County to succeed Dr. Clyde R. Netherton; Dr. Cray will also be secretary of the city board of health.——Dr. Marie B. Kast, Indianapolis, has been elected president of the Midwest Association of Anesthetists.

Society News.—The Indianapolis Medical Society held its annual meeting and ladies' night, January 7. A musicale and vaudeville afforded the entertainment. The society was addressed, January 21, by Dr. Harold M. Trusler on "Experimental Study of Peritonitis," and Dr. John H. Warvel on "Diabetic Coma"; it will be addressed, January 28, by Drs. Joseph J. Littell and Charles P. Emerson on "Chronic Sinusitis with Particular Reference to Respiratory Infection" and "Nontuberculous Parenchymatous Diseases of the Lungs," respectively.

IOWA

Personal.—Dr. Bernard H. Schmidt has been elected chairman of the staff of Mercy Hospital in Davenport.——Dr. Albert V. Hardy, director, state hygienic laboratories, U. S. Public Health Service, Iowa City, has been granted leave of absence to study abroad.——Dr. Milford E. Barnes has assumed his duties as professor and head of the department of hygiene and preventive medicine, State University of Iowa College of Medicine, Iowa City; Dr. Barnes formerly was engaged in public health work in Singapore, the Federated Malay states, and in Siam.

New Method of Caring for the Poor.—The Scott County Medical Society, under a one year contract with the board of supervisors, has assumed the responsibility of treating the sick poor of Davenport. The county will pay the society $12,600; the society will undertake to furnish medical services, exclusive

of dental and hospital benefits, to the needy sick. A rotating staff of physicians will have charge of a clinic for treatment of the ambulatory sick to be maintained between 1 and 2 p. m. at the Davenport Visiting Nurses' Cottage. Dr. William D. Middleton, county physician under the new system, and Dr. George Braunlich, city physician, will work under the direction of the society and will receive their compensation from the society instead of from the county and city. Hospital bills will be paid by the county.

MASSACHUSETTS

Society News.—Dr. Albert Warren Stearns, commissioner of the state department of correction, addressed the annual meeting of the Massachusetts Society for Mental Hygiene, Boston, Nov. 13, 1929, on "Psychiatry in Penal Administration."——The New England Pediatric Society was addressed at its annual meeting, January 10, in Boston, by Drs. Eugene C. Peck, New London, Conn., and George D. Cutler, Boston, on "A Simple Therapeutic Arc" and "Differential Diagnosis in Acute Appendicitis," respectively.——Dr. Henry A. Christian, Boston, will deliver the annual lecture of the Scripps Metabolic Clinic at La Jolla, January 25, on chronic nonvalvular heart disease.

NEW JERSEY

Society News.—The thirteenth meeting of the Tri-State Conference (New Jersey, Pennsylvania, New York) was held in Atlantic City, Dec. 7, 1929; the principal subject for discussion was "Profitable Results Accruing from the Four Years' Existence of the Tri-State Conference."——The Bergen County Medical Society was addressed, Dec. 10, 1929, by Dr. Arthur J. Casselman, Camden, of the state department of health on "Newer Methods and Drugs Used in the Treatment of Syphilis," and Dr. Charles R. Mitchell, Paterson, "Treatment of Gonorrhea in the Male."——A symposium on secondary anemia was conducted by the Camden County Medical Society, Dec. 10, 1929. Among those participating were Drs. George P. Meyer, Henry B. Decker and Thomas M. Kain. Announcement is made of a new monthly bulletin published by the society.—— The Associated Physicians of Monclair and Vicinity were addressed, Dec. 20, 1929, by Dr. Harold R. Mixsell, New York, on "Recent Advances in Pediatrics," and Dr. John D. Lyttle, New York, "Nephritis and Pyuria in Infants and Young Children."——Dr. Edward J. Klopp, Philadelphia, addressed the Gloucester County Medical Society, Dec. 19, 1929, on "When to Operate and When Not to Operate in Acute Abdominal Conditions."——The Hudson County Medical Society conducted a symposium, Dec. 4, 1929, on surgical and medical aspects of peptic ulcer.——"Determination of Surgical Ulcers of the Stomach and Duodenum" was the subject of Dr. Sydney Weintraub of Cornell University presented before the Middlesex County Medical Society, Dec. 18, 1929; Dr. Harold E. Santee, professor of clinical surgery at Cornell, spoke on "Surgery of Gastric and Duodenal Lesions," and Dr. Robert Felter, Pearl River, N. Y., "Follow-Up of Surgical Gastric and Duodenal Lesions."——The Salem County Medical Society was addressed at Salem, Dec. 11, 1929, by Dr. William T. Hilliard on "Enuresis"; Dr. Leslie E. Myatt, Bridgeton, spoke on "Spinal Anesthesia in Major Surgical Operations."

NEW MEXICO

Society News.—Dr. Cecil W. Tucker, Fort Bayard, will address the Grant County Medical Society, February 22, on "Spontaneous Pneumothorax." A clinic will be presented, March 29, by Dr. Lee T. Ferrell on lobar pneumonia and valvular heart disease.

NEW YORK

Average Age of Kingston's Physicians.—In December, there were ninety physicians in Ulster County, according to the state journal of medicine, forty-seven being in Kingston. More than one third of the physicians in Kingston have changed in three years. In 1926 there were forty-seven physicians in Kingston, and between that time and December, 1929, sixteen of these died and one left town. Seventeen new physicians have started practice in that period. The new men are younger, making the average age of the city's physicians 49½ years, whereas, in 1926, it was 57 years. Kingston is a city of about 28,400 inhabitants.

Bills Introduced.—S. 18 proposes to amend the workmen's compensation act by designating as occupational diseases any and all disabling diseases and disabling illnesses contracted in any of the employments coming within the act. S. 32 proposes to amend the workmen's compensation act by providing that "the disablement of an employee resulting from an occupational disease arising out of his employment shall be treated as the happening of an accident within the meaning of the law." S. 126 proposes to make it an assault in second degree for a person who "with intent to injure, or unlawfully administers to or causes to be administered to or taken by another, poison, or any other destructive or noxious thing, or any drug or medicine the use of which is dangerous to life or health." S. 127 proposes to provide threefold damages for injuries caused by the unlawful furnishing, supplying or administering of dangerous drugs or medicines. H. 7 proposes to license the sale of vinous, spirituous, malt or brewed liquors at retail in quantities not exceeding one quart for medicinal purposes. H. 44 proposes to establish a board for the examination and licensing of applicants to practice chiropractic and to regulate the practice of chiropractic. The bill defines chiropractic as follows: "A person practices chiropractic within the meaning of this act who holds himself out as being able to locate and to adjust by hand misalined or displaced vertebrae of the human spine, and tissues adjacent thereto, for the purpose of relieving nerve pressure caused thereby." H. 45 proposes to amend the definition of the practice of medicine in the medical practice act by expressly exempting the practice of chiropractic. H. 120 proposes to provide for the asexualization of insane, idiotic, imbecilic, epileptic and feebleminded persons. H. 157 proposes to prohibit scientific experiments on a living dog. H. 159 proposes to create a board of psychiatric examiners to determine the qualifications of psychiatrists to act in any criminal action. H. 186 proposes to amend that portion of the workmen's compensation act listing the compensable occupational diseases by adding "metal chills" acquired from any process involving the smelting, melting or preparation of metals or their compounds.

New York City

Personal.—Dr. John G. William Greeff was appointed commissioner of hospitals, Dec. 30, 1929, to succeed Dr. William Schroeder, Jr.——Dr. Samuel J. Crumbine, general executive of the American Child Health Association, has gone to Porto Rico, with two assistants, to make a study of the nutrition of children, at the request of President Hoover.

Dr. Koller Honored.—The first gold medal awarded by the New York Academy of Medicine has been conferred on Dr. Carl Koller. The citation read as follows: "Dr. Koller, distinguished ophthalmologist, able in the field of biology, painstaking in research, the discoverer of the anesthetic properties of cocaine, the inaugurator of the era of local anesthesia, conferring on humanity an enormous relief from suffering, a fellow of this academy since 1898, in recognition of his services is awarded this first academy medal."

Prison Hospital Renovated.—With the addition of four new wards for men at the Correction Hospital on Welfare Island, the largest prison hospital in the world will be completed next month, it is reported, practically without cost to the city. The building, which the prisoners have been renovating during the past few years, will now accommodate 450 patients in accordance with approved modern standards. It is said that the Correction Hospital was intended to centralize the hospitalization work of the department of correction, and when patients are brought to it from the penitentiary hospital, the department will be in a position not only to increase medical efficiency but also to work out methods for general character rebuilding among the inmates.

Report of Department of Health.—More than 211,000 children were given preventive treatments in the diphtheria immunization work during 1929. As a result of the squad system of school inspection, which now embraces thirteen squads of three physicians each, the children receive the benefit of a consultation. Twenty-five thousand children registered in the kindergarten and lower classes were examined, and of these 38 per cent were found free from defects; 14 per cent had defective teeth, and 47 per cent general defects. One of the outstanding features of the report of the bureau of child hygiene is that more than 7,000, or 16 per cent, of the children who entered school for the first time were examined by private physicians. According to the report of the bureau of preventable diseases for 1929, 8,000 new patients with tuberculosis were admitted to the city clinics, and 19,686 received treatment; there was a slight decrease in the tuberculosis mortality. Two tuberculosis diagnostic stations to which physicians may send their patients for diagnosis and examination were opened during the year. Arrangements also were made with the board of child welfare for allowances to wives whose husbands are victims of pulmonary tuberculosis. A group of 84,859 food handlers were examined in the clinics. Cerebrospinal meningitis showed an increase in the city, and social diseases a decided increase in the number of cases reported.

OKLAHOMA

Society News.—The Grady County Medical Society held a symposium on meningitis, Dec. 12, 1929, at Chickasha; Dr. Bloyce H. Britton, El Paso, Texas, gave a report on "Eye Symptoms in Meningitis."——Dr. Eugene R. Carpenter, Dallas, Texas, addressed the Logan County Medical Society, Dec. 17, 1929, Guthrie, on "Brain Surgery"; Dr. Joseph C. Stephenson, professor of anatomy, University of Oklahoma School of Medicine, "Brain Anatomy," illustrated, and Dr. Charles B. Barker, Guthrie, "Twelve Cranial Nerves in Health and Disease," illustrated.——The Osage County Medical Society, Fairfax, was addressed, Dec. 2, 1929, by Dr. Myron S. Gregory, Oklahoma City, on "Neuroses in the Home."——Dr. Basil A. Hayes, Oklahoma City, addressed the Stephens County Medical Society, Dec. 3, 1929, on "Prostatectomy."

OREGON

Physicians and Dentists Join in Model Health Center.—The Lane County Medical Society and the Southern Willamette District Dental Society have jointly established a model educational health center for the public of Lane County and as a centralized business office for the two professions. The center, the offices of which are at 865 Olive Street, Eugene, is a recognition of the feeling of responsibility to make available to the public scientific information on health. The plan includes graduate instruction for physicians and dentists, and education of the public as to the aims of medical and dental science and to an understanding of the rules of healthful living, to teach the public to discriminate between the scientific methods of the trained physician and dentist and the unscientific methods and nostrums of the charlatan. The institution will carry on those business activities for physicians and dentists which can best be done by their societies. The centralized plan was developed with the assistance of Mr. Clyde C. Foley, executive secretary of the Oregon State Medical Society. In some cities and states, the activities that will be centralized here are carried on through several independent and sometimes overlapping organizations. The center in Eugene will have a free public health information bureau and reading room where laymen may come to read health books, pamphlets, magazines and posters, some of which will be available for them to take to their homes. The public will be able to obtain biographic details about physicians and dentists and lists of members of the medical and dental societies in order that they may better be protected against unscrupulous and unqualified practitioners. The center will assist school teachers in planning health instruction and in supplying material for health studies in the school; clubs, churches and other groups may call for similar assistance. The business service to be conducted for the two professions will include a credit bureau which will maintain a clearing house of credit information, an employment registry for nurses and technicians, and information about where physicians and dentists may go for graduate study. There will be here also a department which will handle medical and health books, stationery, and scientific journals and various printed forms used in the offices of these two professions. The new health center will be the headquarters of the Lane County Medical Society and the Southern Willamette District Dental Society, the officers of which actively engaged in its organization. It will be under the direction of physicians and dentists and under the general supervision of the executive secretary of the Oregon State Medical Society. Mr. Clarence L. Fitzwater, long a resident of the county, will be the field representative. Maud Van Carmen will be in charge of the office, and the public health information and the reading room will be under the direction of Mrs. David T. Bauman, a recent graduate of the state university.

PENNSYLVANIA

Society News.—Dr. Harry Lowenburg, Philadelphia, will address the Cambria County Medical Society, Johnstown, February 13, on diagnosis and treatment of pneumonia in children, and Dr. Samuel S. Woody, Philadelphia, on "The Proper Handling of Contagion and the Management of a Contagious Disease Hospital."

Philadelphia

Hospital News.—The Methodist Episcopal Hospital dedicated a new suite, Dec. 30, 1929, comprising five operating rooms with sterilizing and etherizing rooms, a dressing room, shower and office. The suite was given by Mr. Charles J. Eisenlohr in memory of his parents.

Personal.—Dr. Jefferson H. Clark has resigned as medical director of the clinical laboratories of Temple University School of Medicine, and has been appointed director of the laboratory of the Philadelphia General Hospital, succeeding Dr. William B. Small, resigned.——Dr. Frederick S. Baldi, formerly visiting physician to the Moyamensing Prison, has been appointed to the newly created position of medical director of city prisons. Dr. R. Powers Wilkinson will succeed Dr. Baldi at the former prison.

Society News.—Edmund Newtown Harvey, Ph.D., professor of physiology, Princeton University, addressed the Pathological Society of Philadelphia, January 9, on "Effect of High Frequency Sound Waves on Cells and Tissues."——The Philadelphia College of Pharmacy and Science at a meeting, January 8, was presented with an oil portrait of Pasteur by Dr. William Duffield Robinson.——The Kensington branch of the Philadelphia County Medical Society has disbanded; its members will attend the Frankfort branch.——The Philadelphia Laryngological Society was addressed, January 7, by Dr. Charles C. W. Judd, Baltimore, on "Rôle of the Eosinophil in Certain Otological Conditions."——Dr. John H. Moore, Bridgeton, N. J., addressed the section on medical history of the Philadelphia College of Physicians, January 13, on "Sir Henry Holland, Physician, Scientist, Traveler, and Man of Letters."——Dr. George W. Crile, Cleveland, addressed the Philadelphia County Medical Society, January 22, on "Influence of Thyroid, Adrenals and the Nervous System on Production and Treatment of Peptic Ulcer." Dr. P. Brooke Bland delivered a health talk under the auspices of the society, January 14, on "The Prospective Mother."——The Academy of Stomatology of Philadelphia was addressed, January 17, by Dr. Michael G. Wohl on "Leukemia and Agranulocytosis."——George H. Meeker, LL.D., dean, Graduate School of Medicine of the University of Pennsylvania, will address the Physicians' Square Club, January 27, on "Certain Phases of Current Medical Practice," and Dr. William N. Parkinson, dean, Temple University School of Medicine, "Present Tendencies in Undergraduate Medical Education." Dr. Herbert M. Goddard has been reelected president of the club for the ensuing year.——The William Potter Memorial Lecture was given by Edwin G. Conklin, LL.D., Henry Fairfield Osborn professor of biology, Princeton University, on "Principles and Possibilities of Human Evolution" at the Jefferson Medical College, January 23.

RHODE ISLAND

Bill Introduced.—H. 532 proposes to exempt pharmacists from jury service.

Society News.—The Rhode Island Medical Society was addressed, Dec. 5, 1929, at Providence, by Dr. Lucius C. Kingman on "Acute Cerebral Injuries"; Dr. Reginald Fitz, Boston, "Modern Problems in Treatment of Diabetes," and Dr. Harry C. Messinger, "Teaching Clinics in Vienna."——The Providence Medical Association was addressed, recently, by Dr. Arthur P. Noyes, Howard, on "A Case of Myasthenia Gravis with Certain Unusual Features," and Dr. Ezra A. Sharp, Cranston, "Streptococcus Hemolyticus Pneumonia."

TEXAS

Health at El Paso.—Telegraphic reports to the U. S. Department of Commerce from sixty-five cities with a total population of about 30 million, for the week ending January 11, indicate that the highest mortality rate (23) was for El Paso, and the mortality rate for the group of cities as a whole, 13.3. The mortality rate for El Paso for the corresponding period last year was also 23, and for the group of cities, 20.5. The annual rate for sixty-five cities for two weeks of 1930 was 13.6 as against a rate of 20 for the corresponding weeks of 1929. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large negro population may tend to increase the death rate.

VIRGINIA

Personal.—Dr. and Mrs. George J. Tompkins, Lynchburg, celebrated their silver wedding anniversary, Dec. 28, 1929.——Dr. Paul C. Colonna, formerly of Richmond, was recently appointed clinical professor of orthopedic surgery in the University and Bellevue Hospital Medical College,——Dr. David Lane Elder, Hopewell, has been elected president of the Kiwanis Club of that city for the ensuing year.

Society News.—The Virginia Tuberculosis Association will hold its annual meeting in Roanoke, February 28. Among others, Dr. Henry Kennon Dunham, Cincinnati, will speak on "Chronic Nontuberculous Lung Lesions."——The Church Hill Medical Society was addressed at Richmond, recently, by Dr. John B. Bullard on "Allergy."——The Tri-State Medical Association of the Carolinas and Virginia will hold its thirty-second annual meeting at Charleston, S. C., February 18-19.——Dr. Elbyrne G. Gill addressed the Whitehead Medical

Society, Roanoke, Dec. 8, 1929, on "Some Problems of Bronchoscopy." — George E. Vincent, Ph.D., president of the Rockefeller Foundation, New York, will give the commencement address of the Medical College of Virginia, June 3.

Books on Mental Hygiene Wanted. — The Virginia Bureau of Mental Hygiene, a recently created division of the department of public welfare, has begun a collection of books and monographs on mental hygiene and kindred subjects. The bureau has writings on psychiatry, neurology, epilepsy, feeblemindedness, psychology, psychiatric social service, criminology, delinquency, behavior problems and prevention of mental disorders. It desires especially to have in its collection books written by Virginia authors. Not only recent material but older publications are needed. Any physician wishing to contribute to this collection may communicate with Dr. William F. Drewry, director, Virginia Bureau of Mental Hygiene, Richmond.

State Society Organizes Department of Clinical Education.—At a meeting, Dec. 4, 1929, of physicians representing the Medical Society of Virginia, members of interested committees, two medical colleges of Virginia, the state department of health and hospital officials, a plan to bring to medical men continuous clinical educational facilities in addition to those offered by medical schools in their graduate courses each year was considered. The result was the organization of the Department of Clinical Education of the Medical Society of Virginia. The major features of the plan include showing the progress and recent advances in medicine and surgery by means of diagnostic clinics in certain hospitals to the physician in his own community and graduate educational and clinical courses by the medical colleges of the state. Collaborative features are the hospital and laboratory exhibits extended by the district and city hospitals on certain days to physicians in their immediate vicinities, radio addresses, and the interchange of clinicians. The acting executive secretary is Mr. George W. Eutsler, Extension Department of the University of Virginia, University.

GENERAL

Broadcast Material from the U. S. Public Health Service.—Since 1921, the U. S. Public Health Service has prepared radio broadcasts on public health subjects for use by the various broadcasting stations throughout the United States. At the present time, more than 200 broadcasting stations are using the material prepared by the public health service. Two radio broadcasts are prepared by the service each month. These are mailed from Washington on the first and fifteenth of the month and cover subjects of general public health interest. The schedule for the coming year includes a variety of subjects, among which will be colds, influenza, rheumatism and cancer. These subjects are discussed from the public health and preventive standpoint.

Record in Cattle Tuberculin Testing.—More cattle were tuberculin tested in November, 1929, according to the U. S. Department of Agriculture, than in any month during the eradication campaign begun in 1917. The total number of tests made by the state and federal veterinarians in November was 1,207,573; of this number 17,567, or about 1.4 per cent, indicated the presence of tuberculosis in animals. The large number of cattle tested was due to the fact that the eradication work was begun in a large area in the extreme northern part of Minnesota; several of the counties have already been designated as modified accredited areas. The department says that the campaign to eradicate tuberculosis, including the removal and slaughter of more than 1,500,000 reactors, has had no adverse effect on the milk supply of the United States; on the contrary, there has been a material increase in the total production and per capita consumption of milk.

Report of Ella Sachs Plotz Foundation.—The sixth annual report of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation notes that eighty applications for grants were received during the last year, fifty-nine of which came from seventeen different countries in Europe, Asia, Africa and North and South America, the remaining twenty-one coming from the United States. The number of grants made during the year was twenty-four, eighteen of which were made to scientists outside the United States. In six years the foundation has made ninety-five grants aiding investigators in the United States, Great Britain, France, Germany, Austria, Hungary, Switzerland, Italy, Sweden, Esthonia, Czechoslovakia, Poland, Chile, Syria and Belgium. For the present, in the distribution of the fund, researches will be shown preference that are directed toward the solution of problems in medicine or in branches of science bearing on medicine and to researches on a single problem or closely allied problems. Seven of the investigations aided in 1929 bore on the general subject of nephritis; in 1928 there were three grants for work in this field, and in each of the four preceding years four grants. Metabolic investigations and studies of the glands of internal secretion have been aided also by grants. Applications for the year 1930-1931 must be in the hands of the executive committee before May 1, 1930, including a statement on the proposed research, amount of money requested, and the objects for which it is to be expended; they should be sent to Dr. Joseph C. Aub, Huntington Memorial Hospital, 695 Huntington Avenue, Boston.

Bequests and Donations. — The following bequests and donations have recently been announced:

Temple University, Philadelphia, $250,000 to be used as part of a fund necessary for the erection of the central tower in the school of medicine building group, by Cyrus H. K. Curtis; $35,000 as an endowment for the laboratories of the school of medicine in memory of his wife by George D. Van Sciver, and $25,000 for modernization of the roentgen-ray department of the medical school by Edward W. Bok.

Babies Hospital, $10,000, and Manhattan Eye, Ear and Throat Hospital, New York, $2,000 by the will of the late Edwin C. Moller.

French Hospital and New York Skin and Cancer Hospital, each $7,500 by the will of the late Dr. John B. McCaffrey.

Women's Homeopathic Hospital, Philadelphia, $1,500 by the will of the late James Watson, as an endowment for the upkeep of a room in the maternity ward in memory of his wife.

St. Vincent's and Mount Sinai hospitals, New York, each $3,000 by the will of the late Mrs. Jane Fitzgerald.

St. Vincent's Hospital of the City of New York, $500,000; Provident Hospital, Chicago, $500,000; Beekman Street Hospital, New York, $500,000; Jewish Mental Health Society, $250,000; New York Foundling Hospital, $50,000; National Committee for Mental Hygiene, $250,000; Howard University, Washington, D. C., $200,000, to be used in connection with the building of the medical school; Henry Street Settlement, New York, $100,000 to be used for additional nursing service, and Beth Israel Hospital Association, New York, $200,000, to be used in connection with the completion of its hospital building, by the will of the late Conrad Hubert.

The dermatologic department of York Hospital, Pa., $10,000 by the will of the late Dr. Samuel K. Pfaltzgraff, to be paid after the death of his wife.

Home for Destitute Crippled Children, Chicago, $20,000, and Alexian Brothers' Hospital, Chicago, $10,000 by the will of the late Andrew Klor.

Medical Bills in Congress. — S. 2515 and H. R. 6848, proposing to allow the rank, pay and allowance of a Colonel, Medical Corps, United States Army, or of a Captain, Medical Corps, United States Navy, to any medical officer below such rank, assigned to duty as physician to the White House, have been favorably reported. S. 2831, introduced by Senator Bingham, Connecticut, proposes to amend the World War Veterans' Act to provide that if an ex-service man is shown to have leprosy prior to July 1, 1927, developing 10 per cent degree of disability, the disability shall be presumed of service origin. S. 2905, introduced by Senator Frazier, North Dakota, proposes to amend the World War Veterans' Act by extending from January 1, 1925, to January 1, 1930, the period within which if an ex-service man has a neuropsychiatric disease and spinal meningitis, an active tuberculous disease, paralysis agitans, encephalitis lethargica, or amebic dysentery developing a 10 per cent degree of disability, the disability shall be presumed of service origin. H. R. 6799, introduced by Representative Mead, New York, proposes to provide that an ex-service man having an active tuberculous disease and entitled to hospitalization under the World War Veterans' Act shall be entitled to take a maintenance allowance of $4.75 a day in lieu of hospitalization and further, that any ex-service man having a tuberculous disease of a compensable degree who has reached a condition of complete arrest shall receive not less than $75 per month as long as such arrested condition shall continue. H. R. 7931, introduced by Representative Robsion, Kentucky, proposes to amend the World War Veterans' Act to provide that any ex-service man shown to have had active tuberculosis, of a compensable degree, subsequent to entrance into military service during the World War period, and prior to January 1, 1930, who has reached a condition of complete arrest shall be paid not less than $50 a month. H. R. 8133, introduced by Representative Johnson (by request), South Dakota, proposes to amend the World War Veterans' Act to provide that if an ex-service man had, prior to January 1, 1925, "diabetes insipidus, primary anemias, arterial sclerosis, diabetes mellitus, Hodgkin's disease, leukemia, polycythemia (erythremia), arthritis deformans, arthritis chronic, carcinoma sarcoma, malignant tumors, cardiovascular renal diseases (including hypertension), cholecystitis chronic, endocarditis chronic, leprosy, myocarditis chronic, nephritis, chronic nephrolithiasis, chronic nontuberculous pulmonary disease," developing a 10 per cent degree of disability or more, the disability shall be presumed of service origin. The bill further proposes to authorize the director to furnish outpatient treatment to veterans of any war, military occupation or military expedition, without regard to the nature or origin of the disability. H. R. 8134, introduced by Representative Johnson (by request), South Dakota,

and S. 2860, introduced by Senator Reed (by request), Pennsylvania, propose to amend the World War Veterans' Act to make it mandatory on the director of the bureau to furnish hospitalization, out-patient and dispensary treatment to veterans of any war, military occupation, or military expedition, without regard to the nature or origin of the disability. These bills further propose to extend from Jan. 1, 1925, to Jan. 1, 1930, the period within which if an ex-service man has a neuropsychiatric disease, spinal meningitis, an active tuberculous disease, paralysis agitans, encephalitis lethargica, amebic dysentery, or leprosy, developing a 10 per cent degree of disability or more, the disability shall be presumed of service origin. H. R. 8416, introduced by Representative Glover, Arkansas, proposes an initial appropriation of $1,000,000 to erect the first unit of a hospital for the free hospitalization, medical and surgical treatment, of all white children under the age of twenty-one years, "if it is found on examination that their physical condition would be helped by medical and surgical treatment, and that they are orphans or their parents are financially unable to give them said treatment." H. R. 8425, introduced by Representative Cramton, Michigan, proposes to amend the World War Veterans' Act to provide that if a veteran had prior to Jan. 1, 1925, bronchiectasis developing a 10 per cent degree of disability or more, the disability shall be presumed of service origin. H. R. 8473, introduced by Representative Reece, Tennessee, proposes to amend the National Defense Act by providing for a pharmacy corps in the medical department, United States Army.

FOREIGN

Embargo on Parrots in Northern Germany.—The importation of parrots into Prussia, Germany, has been prohibited, according to an announcement issued January 16. The embargo was effective immediately. Fourteen cases of psittacosis were reported, January 16, in Cologne, and one death in Dusseldorf.

News of Epidemics.—An outbreak of typhoid was reported in Belgrade, Jugo-Slavia, which up to Dec. 3, 1929, amounted to 300 cases in hospitals and 300 in the homes.——According to the Chicago *Tribune*, an outbreak of bubonic plague was reported in Tunis, January 1; fifty Arabs had been placed in quarantine.

Tuberculosis Congress in Norway.—The seventh conference of the International Union Against Tuberculosis will be held in Oslo, August 12-15. Among others, Prof. A. Calmette of Paris will describe the B C G method of inoculation against tuberculosis; Professor Bull of Oslo will deal with the application of thoracoplasty to the treatment of pulmonary tuberculosis, and Professor His, Berlin, will introduce the subject of the provision of instruction in tuberculosis for medical students and graduates. Persons wishing to attend the congress should signify their intention before May 15. Further information may be had from the secretary of the International Union Against Tuberculosis, 2 Avenue Velasquex, Paris VIII.

International Congress on Microbiology.—This congress will be held at the Pasteur Institute in Paris, July 20-25, under the presidency of Professor Bordet. The subject of nomenclature will be made a special order of business. Application for membership in the congress should be made to M. Georges Masson, éditeur, 120, boulevard Saint-Germain, Paris (VI), before June 15. National committees have been appointed in each country to cooperate with the officers of the congress. The committee for North America is composed of Dr. Hans Zinsser, Harvard University Medical School; Dr. Simon Flexner, Rockefeller Institute, New York; Dr. George W. McCoy, Hygienic Laboratory, Washington, D. C.; Malcolm H. Soule, University of Michigan Medical School, Ann Arbor, and Karl F. Meyer, Ph.D., of the Hooper Foundation for Medical Research.

Deaths in Other Countries

Alexander Gordon Miller, oldest Fellow of the Royal College of Surgeons, Edinburgh, Scotland, and one of Lord Lister's first pupils, recently, aged 87.——**Daniel Lewis Thomas,** medical officer of health for Stepney, of psittacosis, Dec. 10, 1929, aged 60.

CORRECTION

Results of Roentgen Therapy in Carcinoma of the Breast.—In table 1 in the article on "Results of Roentgen Therapy in Carcinoma of the Breast," by Drs. Pfahler and Parry, in THE JOURNAL, January 11, page 101, under the heading "Postoperative, grade II," the statement "30 per cent alive after three years" should have been "50 per cent alive after three years"; and under the heading "Recurrent, grade III," the statement "25 per cent alive after five years" should read "20 per cent alive after five years."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 28, 1929.

Mineral Constituents of Apples and the Soil

In the *Annals of Botany* for October is an article entitled "The Relation Between the Mineral Constituents of Apples and the Soil in Which They Are Grown," by Janet W. Brown. When the phosphates or potash in apples was compared with the available minerals in the soil, the relation was not close; but when comparison was made with the relative solubility in the soil of the separate mineral constituents the relation was found to be much closer. On this basis the mineral constituents of the apple were found to vary with the soil and were different in different orchards. The differences were probably due to differences in the mechanical composition and water content of the soil, for these influence the relative solubility of minerals present. Similarly, the quantities of magnesium and calcium found in the apples bore a direct relation to the amount found in the soil. But not so, iron. So little of this is taken up by the fruit that there must always be more than enough. Results of such research can be turned to practical account. Apples from soils differing in mineral constituents produce fruits that differ in the same respect. In a sense the quality varies with the mineral constituents and this research may provide knowledge that will lead to the production of fruit of better quality. The apples investigated were kept in store by the food investigation board and it was found that a correlation existed between keeping quality and available potassium and phosphates in the soil. Other research has shown that low nitrogen and high sugar contents are also related to good keeping qualities, which suggests that potassium and high sugar are related. Research is leading the way toward the discovery of a system of manuring that will yield a perfect fruit which will be properly balanced in minerals and sugars and will keep well and develop at maturity its full juice and flavor.

Hospitals and Motor Accidents

In the debate on the motor traffic bill, Lord Luke moved in the house of lords an amendment with regard to insurance against third party risks to provide that the policies should ensure to hospitals treating injuries suffered in motor accidents payment of the cost up to a maximum of $125. He said that in 1927 the hospitals in the provinces treated 26,000 inpatients and 39,000 outpatients for injuries due to motor accidents. The cost of such treatment to the hospitals was about $1,150,000, but the amount received from insurance companies and from patients was only $130,000. This question particularly affected hospitals on the great trunk roads. Motor casualties occupied beds required for and provided for local needs. The maximum of $125 was calculated on the basis of $20 a week for six weeks to cover out-of-pocket expenses of the hospital. If this risk should be added to the other risks of the insurance policy it would necessitate only an additional premium of 25 cents or so.

Viscount Bertie moved an amendment to the amendment that the surgeon or physician rendering first aid after the injury should receive payment as well as the hospitals. For the government, Earl Russell said that the grievance of the hospitals had grown much more acute in the last few years, especially that of the small local hospital provided by people in the locality for local needs, which now found its beds filled with people not of the locality, because of motor accidents, while people in the locality were unable to obtain admission. But he did not think that the amendment was the way to remedy this grievance. He suggested that a special clause should be drafted that would provide for the insurance of all persons

who were injured. They might do it by imposing a levy of $1 on every one taking out a license, the money being collected into one central fund for the hospitals. The matter required careful consideration and, if those interested would confer with him, he would see how best the clause could be drafted. At the moment there was the difficulty that a hospital had no legal claim. The amendment was therefore withdrawn.

The British College of Obstetricians and Gynecologists

The first general meeting of the fellows and members of the recently formed British College of Obstetricians and Gynecologists has been held. The president, Prof. W. Blair Bell, said that the council hoped to elect as foundation fellows of the college practically all the senior obstetricians and gynecologists in England, Scotland, Wales, Ireland and the British dominions; and as foundation members, subsequently eligible for fellowship, the less senior obstetricians and gynecologists. No one who was not exclusively engaged in obstetrics and gynecology would be elected, but there would be a certain latitude with regard to those in public health service. The council hoped soon to discuss with the Royal Colleges of Physicians and Surgeons the details of the granting of a diploma in obstetrics and gynecology. Their advice and assistance had been asked by the government with regard to the action which it proposed to take on maternity problems.

Ordinary Writing for the Blind

The National Institute for the Blind has decided that in future every blind person shall have the opportunity of learning to write in script, the handwriting used by people who can see. At the present, few of the blind understand any method of writing other than that of braille—a great disadvantage to professional men. The education committee of the institute holds that the ability to use ordinary handwriting on certain occasions would reduce the handicap of blindness and recommended that the institute provide facilities for learning script. The first step will be the preparation of a copy book in which written letters of the alphabet, words and sentences will be reproduced in dots embossed on the paper. Years ago some such step was discussed but the advantages were not so obvious as now, when the blind take an active part in commerce, industry and several professions. It is hoped that educational authorities will allow script writing to become part of the curriculum of every elementary school for the blind.

A War Wound and Criminal Responsibility

A man, aged 32, was charged with stealing a carton of overshoes and other articles. The neurologist Sir James Purves-Stewart said that the prisoner had a scar on the head which on being roentgenographed showed a piece of shrapnel embedded in the skull. In his opinion the man was not insane but had paroxysms of mental instability. He served during the war and received a disability pension. Dr. Cecil Charles Worster-Drought, another neurologist, thought that there were probably times when the man did things mechanically and also, if his medical history was correct, when he did not know the difference between right and wrong. However, the senior medical officer of the prison did not think that the wound was responsible for the prisoner's delinquencies. The judge asked whether the prosecution could suggest any one who would be prepared to look after the prisoner if he was "bound over," but this could not be arranged, so he was sentenced to twelve months' imprisonment.

Tetanus from Catgut

In a previous letter (THE JOURNAL, July 28, 1928, p. 257) an inquiry made by Dr. T. J. Mackie, professor of bacteriology at Edinburgh University, into a series of nine cases of postoperative tetanus and one of gas gangrene (all fatal except one) which occurred in a limited period in one institution was reported. Professor Mackie was commissioned to make the inquiry by the Scottish board of health and to report on the effectiveness of the means employed for the sterilization of catgut. As the result of experiments, he recommended immersing the so-called ribbons of intestine in 1 per cent aqueous solution of iodine, which he found superior to other antiseptics, such as mercury. A further report to the Scottish board of health by Professor Mackie, in association with Dr. G. S. McLachlan and Miss E. J. M. Anderson, has now been published. The later experiments illustrate the danger of using catgut not sterilized by a method capable of eliminating sporing intestinal bacteria. The second report shows that the presence of *B. welchii* in a tetanus infection renders this much graver. It was known that injection into an animal of sterile soil with tetanus spores facilitates infection. Evidence is now given that this effect is not due to any chemical constituents in the soil. The mechanism seems to be that the leukocytes ingest particles of soil and are thus prevented from ingesting spores. Sterile catgut strands by themselves did not promote the growth of *B. tetani*, but strands containing these spores in their substance furnished a nidus for germination when implanted in the tissues, and the development of vegetative forms was assisted. The organisms thus acquire an aerobic environment and mechanical protection from phagocytes. The adjuvant action of *B. welchii* was found to be paralleled by other organisms—*B. oedematiens*, *Staphylococcus aureus* and *B. coli*. Cold was found to enhance the growth of tetanus in guinea-pigs and it is suggested that this may prove a factor of importance. The value of iodine sterilization is confirmed by the later experiments. In a prefatory note to this report, Dr. J. P. Kinloch, chief medical officer of health to the Scottish department of health, states that Professor Mackie and his collaborators, by devising effective standard methods of sterilizing catgut, have made it practicable to schedule such catgut under the Therapeutic Substances Act, with the result that a small but tragic group of postoperative deaths will be prevented.

PARIS

(From Our Regular Correspondent)

Dec. 18, 1929.

Radiotherapy Applied to Solar Plexus in Aerophagy

Mr. Saïdmann applied radiotherapy to the solar plexus in aerophagy, with excellent results, which he reported recently to the Academy of Sciences. In eleven cases in which the usual treatment had proved ineffective the author obtained satisfactory results. Three of his patients presented a hypersthenic dyspepsia; two had a ptosis corrected by a girdle, and two had pyloric ulcer. The author applied the following technic: With weekly roentgen treatments he combined diathermy by using, as an abdominal electrode, a balloon compressor provided with a sheet of aluminum, the purpose being to reduce the depth of the abdomen so as to bring the electrode as near as possible to the plexus. The results with diathermy were especially good in the patients having perivisceritis associated with their aerophagy. In the cases in which there was ptosis or atonic dyspepsia, better results were secured by irradiation of the abdominal wall with the polymetallic arc, the doses attaining twice the erythema threshold of the first degree. The polyradiotherapeutic technic gave the quickest results of any method. The attacks disappeared completely in five patients; in four cases there was considerable improvement, including the two patients affected with ulcer; two patients were not influenced to any appreciable extent. Diathermy and actinotherapy were well tolerated. On the contrary, the roentgen rays were followed four times (in eighty applications) by nausea, twelve times by asthenia and twice by a temporary increase of the pain. These reactions did not, however, prevent ultimate improvement. The author concludes that, if the polyradio-

therapy exerts so favorable an action, although it possesses no analgesic power, it is because it appears to have an antisecretory effect.

Action of Insulin in Parkinsonian Cachexia

At a meeting of the Société de neurologie, J. Froment and G. Mouriquand discussed the action of insulin in parkinsonian cachexia. They attended a young patient affected with post-encephalitic parkinsonism, whose four limbs were immobilized in flexion; in spite of scopolamine he was suffering from severe cachexia, secondary lymphangitis and attacks of tetany. They subjected him to massage, mobilization and heliotherapy, and continued the use of scopolamine. In addition, they administered injections of insulin (first 10, later 20, units), associated with the ingestion of sugar. A month after the injections of insulin were begun, the patient was able to walk. The improvement was remarkable. The injections were continued for four months, and the first good effects were maintained. The metabolism of this patient was studied in detail. This case confirms the influence of muscular overwork in patients with Parkinson's disease.

In four other cases, Froment employed insulin alone, without other treatment. In three of these patients, the injections were followed by an immediate amelioration of the rigidity and it persisted for several hours. Mr. Barré reported that in a case of Thomsen's disease in which the patient slept excessively, the administration of insulin produced insomnia. In a patient with Parkinson's disease he observed an attenuation of the somnolence but no diminution of the rigidity. The dose used was only from 6 to 8 units.

Malariotherapy in Paresis

The results of malariotherapy applied to paretic patients who were treated in a large neurologic service have been reported by Georges Guillain and Noël Péron. The results vary. Some were early cases, others were of long standing with mental deterioration, slight excitation, some euphoria and depression but without dangerous reactions. The reports covering fifty-seven cases show the following results: (1) The treatment appeared to be without effect in 28.07 per cent of the cases; (2) the treatment brought about a frank physical and mental improvement in 24.56 per cent of the cases, the improvement ranging from a simple remission to an apparent recovery; (3) the treatment in some cases improved the physical but not the mental state, which remained just as it was before the treatment; on the other hand, it does not appear to have become worse later; this result was observed in about 35 per cent of the cases; (4) four deaths, representing a mortality of 7.01 per cent, occurred during the course of the malariotherapy. Guillain and Péron observed that, in the cases in which they noted an unquestionable improvement of the mental state, the physical symptoms of the paresis were modified relatively little; the Argyll Robertson pupils persisted; often also the dysarthria. Experience has shown them that malariotherapy may be applied to ambulant patients, if one considers certain clinical forms of paresis. It is not necessary to emphasize the interest that the patients themselves and their families have in avoiding internment in a psychopathic hospital.

The Smoke Evil

The constant increase of factories in the environs of Paris, about which they form now a veritable girdle, from which rise unceasingly clouds of smoke is again the subject of discussion, and a renewed crusade has been organized to combat the smoke evil. The smoke-charged atmosphere contains not only soot and coal dust but also sulphurous and sulphuric acid, the prolonged action of which, even in small doses, is harmful to mucous membranes, not to mention their harmful effects on vegetation. Dr. Bordas recalled observations made at Manchester, England, a city known for its pall of smoke, where only from 9 to 14 per cent of the young men wishing to enter the army or navy were found "fit" and free from pulmonary disorders. Mr. L. Besson emphasized that the luminosity is diminished, and the penetration of ultraviolet rays is reduced from one half to two thirds. These are grave consequences for the general hygiene of a large city. Investigations in England have shown that three million tons of soot is thrown annually into the atmosphere of England, which is equal to three days' output of all the coal mines of Great Britain, which constitutes the work of a million men. The prefect of police has called attention, with considerable severity, to the municipal ordinance prohibiting the production of smoke by industrial establishments located near the city, and has likewise extended their application to a large number of buildings with central heating plants. There are now available a considerable number of smoke-consuming devices, and severe penalties will be imposed on industrialists who neglect to employ them.

Parking Regulations for Automobiles

In order to diminish traffic congestion, at least in the main arteries of Paris, the prefect of police has recently issued an order prohibiting, from the first of January on, the parking of automobiles in front of houses and buildings, during the day. Prolonged parking of vehicles is, indeed, one of the chief causes that reduce the space reserved for street traffic. The worst violators of the parking ordinance are employees living in the suburbs, who, from the time they arrive at their place of employment until they leave in the evening, park their car in front of the building where they are employed, in order to save garage charges. Then, there are the cars of the women who spend a long time on their shopping tours. Henceforth, the parking of cars in the central area of Paris, during the hours of the heaviest traffic, will be limited to half an hour. This measure, while it satisfies a part of the population, threatens to cause great inconvenience to others, and more particularly to physicians, whose professional duties may keep them at the bedside of a patient for a length of time that it is impossible to foresee. A strict application of the ordinance would work great hardship on them, if they have to run the risk of frequent fines, and likewise on the patients through the shortening of the length of the visits, or the time devoted to operations and the like. The protests of the medical syndicates filed with the prefect of police have not brought as yet any special concessions in favor of the physicians. One objection that the police have to granting any concessions is that a physician's car may be occupied by the wife or some member of the physician's family at times when no professional duties are involved. A Parisian medical automobile club has, therefore, been founded, of which the surgeon Jean Louis Faure has been chosen president, in order to give more cohesion to the demand of the physicians. The automobile club, in addition to other special advantages that will accrue to its members, will furnish its membership with a special car emblem, which will identify the car of the practitioner, which will be employed only for professional visits. The prefect of police, however, does not appear disposed to make any exceptions to the law, since the granting of special favors to the physicians would open the way for many further requests, but he has instructed his men to show cars bearing the emblem a certain amount of leniency. As a result, membership in the club has been rapidly recruited among the Paris physicians who are owners of automobiles.

The Sanitary Condition of French Equatorial Africa

Mr. Antonetti, governor general of French Equatorial Africa, reports that the sanitary condition of that excellent colony, heretofore not easily exploitable on account of the unhealthful climate, is improving from year to year. The construction of a railway from Brazzaville, the chief town, to the west coast cost many human lives; but that unhappy period is past. Progress has been made in combating trypanosomiasis, smallpox

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and infant mortality. The number of physicians and nurses has been doubled. The medical budget of 2,500,000 francs in 1924 had risen to 10,765,000 francs in 1928. In those four years, 2,403,000 calls were made among the native black population and 98,000 natives were treated for trypanosomiasis. Whereas formerly the native population was steadily diminishing, between 1921 and 1928 the number of natives increased from 2,854,948 to 3,157,000.

BUENOS AIRES

(From Our Regular Correspondent)

Nov. 25, 1929.

Meeting of Pathologic Society

The fifth meeting of the Sociedad Argentina de Patología Regional del Norte was held in Jujuy city, October 7-10, under the presidency of Dr. Salvador Mazza. Physicians of Salta, Tucumán, Santiago del Estero, Buenos Aires, Santa Fe and Córdoba, and many university professors, were present. There were delegations also from neighboring countries. Brazil was represented by Drs. O. da Fonseca and M. Torres, Paraguay by Drs. Gatti and Riveros, and Uruguay by Dr. E. Cordero. About 140 papers were presented, some of which were on the following subjects: *Spirochaeta* and hosts, by Drs. Nicolle and Anderson; poradenitis and inguinal granuloma, by Drs. Franchini, Vaccarezza, Delamare and Gatti; ancylostomiasis, by Drs. Rickard and Cabral de la Barrera; yellow fever, by Drs. Hoffmann, Aragão, Torres, Chagas and Marquez da Cunha; papilloma caused by thorns of cenchrus, by Dr. Riveros; chiggers, by Drs. Delamare, Gatti and Battilana; myiasis, by Drs. Bustos, Santillán, Mazza and Parodi; leishmaniasis, by Drs. Portugal, Bernasconi, Nudelman, Borzone, Arias Aranda, Mazza y Luna and González; the action of coca leaves, by Drs. Domínguez and Morera; leprosy, by Drs. Marchoux, Riveros, Rodríguez Guerrero, Molinelli, Mendioroz, Portugal, Fidanza and others; nutritious value of the carob bean, by Dr. Rietti; goiter, by Drs. de la Barrera, Mazza, Arias y Vidal Güemes, Mazzocco and Arias Aranda; amebiasis, by Drs. Mello and Iribarne; intestinal parasitic infestation, by Drs. Carreño, de la Barrera y Riva and Antequeda. Many other subjects were discussed. At this time the building of the University Mission for studies of pathology in the northern regions of Argentina was inaugurated.

Lectures by Foreign Teachers

At the headquarters of the Asociación Médica Argentina, Prof. J. Lepine of the Faculty of Medicine of Lyons gave five lectures, Aug. 14-Sept. 9, 1929, on "Pathology and Emotion, and Their Relation to the Sympathetic Nervous System," and two courses of three lectures each on "Infection and the Nervous System" and on "Mental Pathology." He lectured before the Academy of Medicine, August 9, on "Pyretotherapy in Paresis," and before the Faculty of Medicine of Buenos Aires, August 29, on the plans for the new Faculty of Medicine of Lyons. At the Instituto de Cirugía of the Faculty of Medicine of Buenos Aires, Prof. R. Leriche of Strasbourg gave a series of lectures on gastric ulcer, asthma, angina pectoris, Raynaud's disease and surgery of the sympathetic system. At the National Academy of Medicine, Prof. Pasteur Vallery Radot of Paris lectured on the treatment of hemorrhagiparous conditions. Professor Lesohke of Berlin and Nobécourt of Paris are expected to come to Argentina in 1930, and plans are being made to invite foreign medical authorities to attend the sessions of the jornadas médicas during the special medical week in Argentina.

Psittacosis

During June, July and August, 1929, there were cases of grippal diseases and of pneumonia all over Argentina. A young physician of Córdoba, Dr. Lorenzo Barros, published in some political newspapers that the epidemic came from Brazil. He based his assertion on the grounds that he had observed grave cases with unusual symptoms which, according to the patients' accounts, were due to either the buying of birds that had come from Brazil or to visiting the exhibition of these birds, and that the birds died in large numbers. The physicians of Córdoba contended before the Círculo Médico that the disease presented a common symptomatology; that almost the entire population of the city attended the charming exhibition of the birds, and that whenever birds are brought from Brazil to Argentina in the winter they die. Dr. Barros published his reports in the newspapers of Buenos Aires and of Córdoba. Fear spread all over the country, and a large number of parrots and other birds were either killed or presented to zoological gardens. Neither patients nor birds were submitted to a bacteriologic examination, but definite assertions abounded. The Buenos Aires public health department appointed a committee, which reported that the disease had been hypothetically considered as psittacosis but no case had been proved. The Society of Internal Medicine of the Asociación Médica Argentina also appointed a committee, which probably will not be able to give any information, because clinics for the observation of patients or animals are not available. A bacteriologist of Tucumán believes that he identified a paratyphoid bacillus, but the scientific data have not yet been published. According to the information obtained from the public health authorities of Brazil and from the Instituto Oswaldo Cruz, psittacosis has never been observed in Brazil, and during recent months there was no epidemic of birds in that country.

The Bartolomé Devoto Foundation

Mrs. Junana González de Devoto has donated a memorial fund under the name and in memory of her husband to aid the studies for improvement of public and private health. The fund is under the patronage of the National Academy of Medicine of Buenos Aires. It permits scholarships for physicians and pharmacists in postgraduate courses of the biologic sciences (physiology, biologic chemistry, bacteriology, histology and embryology). The memorial fund amounts to 100,000 pesos ($43,000), the interest on which will support a scholarship in this country and one abroad. She also donated 25,000 pesos ($10,750), the interest on which will be allowed to accumulate until the capital amounts to 100,000 pesos.

Postgraduate Course in Obstetrics

In addition to the postgraduate courses which the Faculty of Medicine of Buenos Aires now offers, the Maternity Hospital of the Hospital Rivadavia, under the direction of Prof. Dr. A. Peralta, has organized a postgraduate course in obstetrics.

Professor of Clinical Medicine Appointed

The president of Argentina has appointed Dr. Juan Goyena regular professor of clinical medicine in the Faculty of Medicine of Buenos Aires. Professor Goyena has been in charge of the Rawson Hospital, in the place of Prof. L. Agote, who was recently retired.

Personals

Prof. Dr. Alfredo Lanari has resigned as professor of radiology and physical therapy and dean of the Faculty of Medical Sciences of Buenos Aires. The advisory board suggested the appointment of Dr. E. Lanari for those positions. Dr. J. T. Lewis has been appointed full-time professor of physiology and dean of the Institute of Physiology of the Faculty of Medicine of Rosario, Argentina. Dr. Enrique Hug, full-time professor of pharmacology of the Faculty of Medicine of Rosario, Argentina, is leaving for the United States, to visit the medical centers. Dr. A. D. Marenzi has been appointed professor of the second course of biologic chemistry, which is one of the necessary subjects to obtain a degree as a doctor of physiologic chemistry of the Faculty of Medical Sciences of Buenos Aires.

Deaths

Dr. Pedro J. Garcia, professor of the Faculty of Medical Sciences of Buenos Aires, and secretary of the Academy of Medicine, died in that city. Dr. F. P. Lavalle, ex-professor of analytic chemistry and member of the Academy of Medicine of Buenos Aires, has died. He practiced as a chemist for more than forty years.

AUSTRALIA

(From Our Regular Correspondent)

Dec. 16, 1929.

Hospital Finance

In discussing problems of hospital finance with the Rotary club in Melbourne recently, the Victorian chief inspector of charities, Mr. C. L. McVilly, pointed out that 85 per cent of the patients at public hospitals were of the industrial class and could pay some proportion of their hospital expenses instead of being an almost total charge on the charity of the community. It is hoped that the enlargement of the existing hospitals to a community basis will partially solve this problem and that the intermediate group will thereby be enabled to retain their independence; but the desirable rate of progress toward this ideal is hampered by financial conditions. Mr. McVilly's proposal is that each employer should establish a trust fund into which each employee should contribute sixpence (twelve cents) a week, as insurance against the cost of hospital treatment. This system has already proved satisfactory in a few small industrial towns in Australia.

In Melbourne, last year, £24,413 was contributed by the "industrial section" to the Lord Mayor's Fund, which acts as a central agency for collecting and distributing public aid to metropolitan charities. This amount, however, was quite inadequate to support a hospital service for the industrial section. Mr. McVilly invited the Rotarians to assist him with his scheme by establishing trust funds for hospital insurance among the employees of the business groups which they represent. The ultimate object is the foundation of a central trust fund.

The district governor of Rotary, Mr. A. C. Holtz, considers this proposal to be impracticable from a Rotary standpoint until a definite proposal has been formulated by hospital authorities and those administering charitable funds. Mr. Holtz explained that Rotary practice in regard to community service is that no club endorses any project, however meritorious, unless the club is prepared to assume all or part of the responsibility for the accomplishment of the project. Only when there is no adequate civic or other organization in a position to speak and act for the community does a Rotary club engage in a general community service activity that requires for its success the active support of the whole citizenship. It would be quite competent for the community service committees of the various Rotary clubs in the area proposed to be covered by Mr. McVilly's plan to consider the various implications of his proposal and to inform the club members of any other salient facts which in their opinion might bear on it. Until bodies charged with the administration of hospital relief formulate some principle in this connection, individual Rotarians or clubs could not effectively embark on the plan which Mr. McVilly wishes to establish. The immediate creation of trust funds without a clearly established project to which those funds could be applied would be premature from the Rotary point of view.

Increased Salaries for Resident Medical Officers

It has long been a difficulty for recent graduates who have secured resident hospital appointments to exist in any degree of comfort on the meager salaries received. Twenty years ago in Victoria they received an "honorarium" of £20 yearly; ten years ago it was increased to £50, four years ago to £75, and now the committee of the Melbourne Hospital has been asked by the medical graduates at the hospital that an increase to £130 yearly be granted. The finance subcommittee has increased the salary to £100 per annum for 1930 only, when the matter, in association with a reorganization of the resident staff, will be again considered. The writer has vivid recollections of his own period of hospital internship. The incident of two months' salary being more than absorbed by the purchase of quite a mediocre suit of clothes is recalled. The resident medical officers were required to provide themselves with white coats for hospital use, and we always upheld the custom of purchasing long ones reaching to the knees. Such was true economy, for it enabled us to get more wear from our nether garments than would be the case with a coat of normal length. Coming at the conclusion of a five and a half year's student existence, the financial strain was made bearable only by a camaraderie which was equaled only by that of war-time experiences.

Social Services in New Zealand

Comment on the cost of the social welfare services in the dominion is made in the current issue of the *Bulletin of the Hospital Boards' Association of New Zealand* under the heading of "The Burden." It is stated that during the past year the community has found for social welfare purposes £5,511,390, or nearly half of the country's external trade balance of £12,000,000. So deeply were the costs cutting into the economic life of the country that the increasing charges under all heads were causing serious concern to the organizations that carried the responsibility of administering the services. During the past year, charitable aid provided by the hospital boards of the dominion amounted to £245,738, an increase of more than £20,000 over the previous year. Details of other costs were given as follows: net maintenance costs of hospitals with an increased charge in excess of £60,000, £1,206,190; health department institutions, £112,660; net maintenance of psychopathic hospitals, £303,300; industrial schools and probation system, £122,662. Patriotic, war relief, Red Cross, St. John Ambulance and kindred societies disbursed £122,134. The Salvation Army, with thirty-five centers of social work, including appeals bequests and subsidies, disbursed £77,283. Other religious organizations combined (including the Roman Catholic, Church of England and other churches), figures incomplete, expended £94,000. Combined friendly societies (figures incomplete) paid £505,600. The pensions bill, with its increase in all departments except epidemic and Boer War pensions, showed a total increase over last year's figures of more than £100,000, and, including the somewhat surprising increase of £33,000 in war pensions, totaled £2,721,823.

The total of these charges is £5,511,390, or, as the article points out, the equivalent of £4 per capita of the population of New Zealand. No account was taken of the assistance rendered by relatives and others to indigent persons, either voluntarily or under the Destitute Persons Act, of the funds disbursed by many societies of a charitable nature, of whose activities it was impossible to obtain any information, or of any amounts spent in the relief of unemployment.

It must be explained that the distribution of charitable aid is made by the boards of the respective hospital districts in New Zealand. The population of the dominion is just under one and a half million.

Distribution of Radium in Australia

Until September, 1927, the commonwealth department of health had not done more than subsidize research into cancer, but in that month 10 Gm. of radium was purchased and a specialist in the use of radium for the treatment of cancer was engaged. This radium was obtained in needles, plates, and tubes suitable for treatment of patients in hospitals; in large quantities, for the treatment of special cases with large doses; prepared in another form, so that it could be used for

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the production of an emanation, and a small number of tubes to act as standards for measurement. Careful consideration was given to the method of distributing the radium, and it was decided, in view of the dangers attendant on its use in unskilled hands, and of the necessity for concentrating a considerable variety and quantity of radium containers at a limited number of fully equipped centers, that only one properly equipped center should be established in each capital city. In addition to this it was thought desirable to place sufficient radium for the present limited range of treatment at four extrametropolitan hospitals.

The distribution along these lines has now been completed for a number of months, and each of the centers is working steadily and by gaining experience is gradually improving the quality of the service rendered. An additional advantage in the system of national distribution thus adopted is the possibility afforded of keeping uniform records of the patients treated, so that in a few years most valuable data will be obtained as to the success achieved in the treatment of cancer.

It is quite justifiable to say that, while perhaps individual institutions in other countries were more fully equipped and developed, the organization to deal with cancer had been developed on a national scale to a degree of efficiency at least equal to that of any other country.

Personal

Dr. H. Whitridge Davies has been appointed by the senate of the Sydney University to the chair of physiology. Dr. Davies is a son of Professor Harold Davies of the University of Adelaide and was born in South Australia in 1894. He has been lecturer in physiology and pharmacology at Leeds since 1926 and has had experience in the Universities of Oxford, Edinburgh and New York. He graduated bachelor of medicine and bachelor of surgery at the University of Adelaide in July, 1927, and served with the army medical corps in the war. He is the author of many published papers.

Death of Dr. Chilton

Dr. Charles Chilton, an eminent New Zealand biologist, died at Christchurch, October 25. He graduated at Canterbury in 1880 as a bachelor of arts, and the following year he took the M.A. degree with first-class honors in zoology. At the University of Otago in 1887 he received the B.Sc. degree, being the first to do so in New Zealand, and in 1893 gained his D.Sc., also being the first doctor of science in the university. In 1895 he went to Scotland and studied for his medical degree, later practicing as an ophthalmic surgeon in Christchurch. The call of pure biology was too great, however, and he accepted the position of professor of biology and paleontology at Canterbury in 1910, remaining there until 1928. It was during this period that he did the major part of his valuable scientific work. He made a special study of the crustacea, and he became the highest authority in this branch in Australasia. In addition to this, Dr. Chilton had a wide knowledge of zoology and botany particularly in their relation to the fauna and flora of New Zealand.

Marriages

WILLIAM LEROY DUNN, Ashland, Va., to DR. THELMA F. BRUMFIELD of University, Dec. 26, 1929.

ALBERT W. BRYAN, Madison, Wis., to Miss Mollie Maxine Rahr of Manitowoc, Dec. 14, 1929.

STEWART R. ROBERTS, Atlanta, Ga., to Miss Ruby Holbrook of New York, Dec. 16, 1929.

ANGUS LLOYD MACLEAN to Miss Eleanor I. Hodges, both of Baltimore, Dec. 28, 1929.

ROBERT BLACK to Mrs. Mary Curry, both of Blackford, Ky., Dec. 24, 1929.

Deaths

Clarence Floyd Haviland ✠ New York; Syracuse University College of Medicine, 1896; clinical professor of psychiatry, Columbia University College of Physicians and Surgeons since 1927; formerly clinical assistant in the department of neurology and psychiatry, Columbia University and Cornell University; past president and secretary-treasurer of the American Psychiatric Association; member of the Association for Research in Nervous and Mental Diseases and the American Psychopathological Association; at one time member of the Connecticut State Commission of Psychopathic Hospitals and member and chairman of the New York State Hospital Commission, 1921-1926; member of the executive committee of the National Committee for Mental Hygiene; member of the advisory council of the Milbank Memorial Fund; superintendent of the Connecticut State Hospital, Middletown, 1915-1921, and since 1926 superintendent of the Manhattan State Hospital; aged 54; died, January 1, at the Anglo-American Hospital, at Cairo, Egypt, of pneumonia and influenza.

Edward W. Mulligan ✠ Rochester, N. Y.; Rush Medical College, Chicago, 1883; Bellevue Hospital Medical College, New York, 1884; member of the American College of Surgeons; on the staffs of the General Hospital and St. Mary's Hospital, Rochester, and the Frederick Ferris Thompson Hospital; aged 71; died, January 2, of diabetes mellitus, arteriosclerosis and myocarditis.

Tallyrand Desaix Myers ✠ Lieut., U. S. Navy, retired, Pasadena, Calif.; Jefferson Medical College of Philadelphia, 1868; member of the Medical Society of the State of Pennsylvania; entered the Navy in 1870, was made past assistant surgeon with rank of lieutenant in 1875; was retired in 1882 for disability incident to the service; aged 83; died, Dec. 26, 1929, of heart disease.

Benjamin Roman, Buffalo; Cornell University Medical College, New York, 1903; member of the Medical Society of the State of New York and the American Association of Pathologists and Bacteriologists; resident professor of pathology, University of Buffalo School of Medicine; aged 54; died, Oct. 25, 1929, at the Buffalo General Hospital, of lobar pneumonia.

John Dillon Spelman, Pittsburgh; University of Cincinnati College of Medicine, 1911; served during the World War; superintendent of the Montefiore Hospital Association of Western Pennsylvania; formerly superintendent of the Touro Infirmary, New Orleans; aged 40; died, Dec. 17, 1929, of pulmonary embolus, following an operation for drainage of an appendical abscess.

James Edward Hobgood, Morgantown, N. C.; Jefferson Medical College of Philadelphia, 1907; member of the Medical Society of the State of North Carolina; past president of the Davidson County Medical Society; formerly member of the county board of health; on the staff of the State Hospital for Insane; aged 47; died, Dec. 20, 1929, of cerebral hemorrhage.

Herbert Warren White ✠ Boston; Harvard University Medical School, Boston, 1880; formerly professor of theory and practice of medicine, Tufts College Medical School; one of the founders of the New England Baptist Hospital and for many years visiting physician to St. Elizabeth's Hospital; aged 71; died suddenly, Nov. 24, 1929, of angina pectoris.

Booth Eckert Miller, Harrisburg, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1909; member of the Medical Society of the State of Pennsylvania and the American Psychiatric Association; on the staff of the Harrisburg State Hospital; aged 46; was killed, January 8, by a patient in the state hospital.

John Leffingwell Hatch, New York; University of Pennsylvania School of Medicine, Philadelphia, 1888; lecturer on bacteriology and demonstrator of morbid anatomy at his alma mater; member of the American Urological Association; aged 66; died, January 9, of uremia, arteriosclerosis, myocarditis and nephritis.

Robert Emmett Griffin, Owensboro, Ky.; Kentucky School of Medicine, Louisville, 1898; member of the Kentucky State Medical Association; past president of the county board of health; served during the World War; formerly on the staff of the City Hospital; aged 58; died, Dec. 17, 1929, of myocarditis.

Robert Abercrombie Smith ✠ Chicago; Rush Medical College, Chicago, 1903; formerly assistant professor of pathology, University of Illinois College of Medicine; on the visiting staff of St. Joseph's Hospital; aged 49; died, Dec. 15, 1929, at the Presbyterian Hospital, of carcinoma of the colon.

Martha Anderson ✠ Quincy, Ill.; Northwestern University Woman's Medical School, Chicago, 1898; formerly medical director of the Adams County Tuberculosis Sanatorium, Quincy; aged 58; died in December, 1929, at Roberts, of subphrenic abscess following resection of the pylorus.

Herbert Lawson Jordan ✠ Chicago; Bennett Medical College, Chicago, 1914, attached to the U. S. Public Health Service as an assistant surgeon in 1918-1919; member of the Chicago Health Department; aged 48; died, Dec. 13, 1929, of spontaneous pneumothorax and heart disease.

Robert A. Haynes, Clarksburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1896; member of the West Virginia State Medical Association, and the American College of Surgeons; aged 62; was instantly killed, Dec. 5, 1929, in an automobile accident.

Lucius Lucine Button ✠ Rochester, N. Y.; New York Homeopathic Medical College and Hospital, 1895; member of the American College of Physicians; on the staff of the Genesee Hospital; aged 60; died, Dec. 30, 1929, of coronary sclerosis and angina pectoris.

Asa Cornelius Whitaker, Julian, N. C.; Medical Department, University of Tennessee, Nashville, 1903; member of the Medical Society of the State of North Carolina; aged 56; died in December, 1929, of injuries received in an automobile accident.

Ward C. Tunison, White Hall, Ill.; Cincinnati College of Medicine and Surgery, 1895; member of the Illinois State Medical Society; aged 60; died, Dec. 20, 1929, at St. John's Hospital, Springfield, of myocarditis and cholecystitis.

Stewart Samuel Bibbens, Syracuse, N. Y.; Syracuse University College of Medicine, 1893; member of the Medical Society of the State of New York; aged 64; died, Nov. 28, 1929, at Houston, Texas, of cerebral hemorrhage.

Charles Howard Pratt ✠ Plainfield, N. J.; Columbia University College of Physicians and Surgeons, 1906; on the staff of the Muhlenberg Hospital; served during the World War; aged 46; died, January 3, of heart disease.

Caroline Loomis Mitchell, Norristown, Pa.; Keokuk Medical College, 1906; on the staff of the Norristown State Hospital; aged 50; died recently, in Baltimore, of injuries received in an automobile accident.

John W. O'Haver, Danville, Ill.; Cincinnati College of Medicine and Surgery, 1882; member of the Illinois State Medical Society; aged 80; died, Dec. 27, 1929, at the Lakeview Hospital, of pneumonia.

Henry Newton Coons, Lebanon, Ind.; Hahnemann Medical College and Hospital, Chicago, 1883; member of the Indiana State Medical Association; aged 76; died, Dec. 24, 1929, of angina pectoris.

John C. Wintersteen, Bloomsburg, Pa.; Jefferson Medical College of Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; aged 67; died, Nov. 11, 1929, of heart disease.

Raffaele Pantaleone, Trenton, N. J.; Royal University of Rome Faculty of Medicine and Surgery, Rome, Italy, 1896; member of the Medical Society of New Jersey; aged 58; died, Dec. 3, 1929.

Paul Rexford Neal ✠ Chicago; Rush Medical College, Chicago, 1917; member of the Kansas Medical Society; aged 37; died, Nov. 12, 1929, at the Augustana Hospital, of heart disease.

Harlan Grover Claypool, Wheelwright, Ky.; Hospital College of Medicine, Louisville, 1907; served during the World War; aged 43; died, Dec. 11, 1929, of a self-inflicted bullet wound.

L. Abraham Schaffer, Edgerton, Mo.; Missouri Medical College, St. Louis, 1876; member of the Missouri State Medical Association; aged 81; died, January 5, of cerebral hemorrhage.

Philip David Pence ✠ St. Charles, Va.; Medical College of Virginia, Richmond, 1907; president of the Lee County Medical Society; aged 55; died recently of cerebral hemorrhage.

David Burdett Zbinden ✠ Downey, Calif.; Vanderbilt University School of Medicine, Nashville, 1913; served during the World War; aged 40; died, Nov. 20, 1929, of pneumonia.

George Price McCoy ✠ Hopewell, Va.; University College of Medicine, Richmond, 1905; served during the World War; aged 48; died, Nov. 5, 1929, at Monterey, of septicemia.

Joseph Shelton Poindexter, Jacksonville, Ill.; College of Physicians and Surgeons, Keokuk, 1880; aged 82; died, Nov. 25, 1929, at Girard, of pericarditis and arteriosclerosis.

George M. Skinner, Springwater, N. Y.; College of Physicians and Surgeons, Baltimore, 1886; aged 76; died, Dec. 30, 1929, at the Bethesda Hospital, Hornell, of carcinoma.

John W. Bradley, Tsingkiangpu, China; Medical College of the State of South Carolina, Charleston, 1896; for many years a medical missionary; aged 56; died, Nov. 22, 1929.

Arthur Charles Leonard ✠ Kansas City, Mo.; Chicago Homeopathic Medical College, 1896; served during the World War; aged 55; died, Dec. 22, 1929, of heart disease.

Jay Maurice Harrison, Toledo, Ohio; Toledo Medical College, 1905; served during the World War; aged 52; died, Dec. 1, 1929, in the Toledo Hospital, of pneumonia.

Ira Kline Davis, Braddock, Pa.; Jefferson Medical College of Philadelphia, 1925; aged 32; died, Nov. 17, 1929, at St. Francis Hospital, Pittsburgh, of pneumonia.

Charles G. Rayhill, Belleville, Ill.; St. Louis Medical College, 1882; member of the Illinois State Medical Society; aged 71; died, Dec. 30, 1929, of myocarditis.

Joseph Oscar Kinard ✠ Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1905; was found dead, Dec. 30, 1929, of a gunshot wound, presumably accidental.

Maxwell E. Silver ✠ Detroit; College of Physicians and Surgeons, Baltimore, 1897; aged 54; died, Dec. 25, 1929, of cerebral hemorrhage and myocarditis.

Jacob Miller, Buffalo; University of Buffalo School of Medicine, 1891; aged 60; died, Nov. 2, 1929, of acute myocarditis and carcinoma of the larynx.

John Crosby Shaw, Marlin, Texas; Medical College of Alabama, Mobile, 1871; Confederate veteran; aged 83; died, Dec. 16, 1929, of chronic nephritis.

Charles Aiken Rush, Hampton, S. C.; Medical College of the State of South Carolina, Charleston, 1896; aged 57; died, Dec. 23, 1929, of acute nephritis.

Carl L. Geyer, Taylor, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1887; aged 75; died, Dec. 19, 1929, of influenza.

Robert C. Williams, Augusta, Ga.; Meharry Medical College, Nashville, Tenn., 1898; aged 54; died, Dec. 26, 1929, in a local infirmary, of endocarditis.

Frank Simon, Oakland, Neb.; College of Physicians and Surgeons, Baltimore, 1884; aged 67; died, Nov. 24, 1929, of heart disease and pneumonia.

Charles Steward, Ashville, Ohio; Medical College of Ohio, Cincinnati, 1873; aged 84; died, Oct. 15, 1929, of a fractured hip, received in a fall.

William Elliott Camp, Clarksville, Ind.; Medical College of Indiana, Indianapolis, 1896; aged 58; died suddenly, Nov. 30, 1929, of heart disease.

Stephen Chikow, Palo Alto, Calif.; University of Lausanne Faculty of Medicine, Lausanne, Switzerland, 1923; aged 36; died, Oct. 20, 1929.

William H. McIntyre ✠ Long Island City, N. Y.; Medical Department of Columbia College, New York, 1890; aged 62; died, Nov. 28, 1929.

Frederic Zur Nedden, Milwaukee; Hahnemann Medical College and Hospital, Chicago, 1883; aged 77; died, Dec. 26, 1929, of uremia.

William Alexander Francis, Bowling Green, Ky.; Cincinnati College of Medicine and Surgery, 1876; aged 78; died, Nov. 20, 1929.

Julian B. Hubbell, Glen Echo, Md.; University of Michigan Homeopathic Medical School, Ann Arbor, 1883; aged 83; died, Nov. 19, 1929.

Anderson M. Woodward, Los Angeles; University of Nashville (Tenn.) Medical Department, 1905; aged 64; died, Oct. 15, 1929.

William H. Null, St. Louis; Missouri Medical College, St. Louis, 1875; aged 81; died, Nov. 29, 1929, of chronic myocarditis.

Leander Albert Cliff ✠ Boston; Harvard University Medical School, Boston, 1874; aged 82; died, Dec. 1, 1929, of myocarditis.

Wilfred P. Byrne, New York; University of Vermont College of Medicine, Burlington, 1889; aged 61; died, Nov. 30, 1929.

Marion A. Johnston, Oaktown, Ind.; Jefferson Medical College of Philadelphia, 1881; aged 75; died, Nov. 19, 1929.

C. Frithiof Larson, Crystal Falls, Mich.; Rush Medical College, Chicago, 1888; aged 68; died in November, 1929.

John Hardy Spicer, Toledo, Ohio; Toledo Medical College, 1898; aged 74; died, Dec. 21, 1929, of heart disease.

J. C. Buice, North Little Rock, Ark. (licensed, Arkansas, 1903); aged 69; died, Nov. 28, 1929.

Bureau of Investigation

LUKUTATE

Another Rejuvenating Nostrum, from the Orient via Germany

The student of contemporary nostrum exploitation knows that many a panacea, after wearing out its welcome in the country of its origin, goes far afield seeking new victims. Thus, an American "patent medicine" whose advertising has ceased to be convincing to the people of the United States and Canada is transferred to Europe or Latin America. Conversely, products that have had a meteoric career in Europe—up like a rocket and down like the stick—are brought over to the United States for the delectation of the easy-going American and Canadian.

"Lukutate" is a nostrum that seems to have run a somewhat hectic course in Germany. In due time, its value was correctly appraised, and the Germans appear to have relegated it to the limbo of futile fakes. Today, the Lukutate Corporation of America, is trying to convince the people of these United States that in Lukutate we have a rejuvenating substance of marvelous potentialities.

Should you ask what is Lukutate, you will find no satisfying answer in the literature of the Lukutate Corporation. No secrecy, no mystery; no mystery, no sales! The word Lukutate, we are told, is derived from the Hindustani, meaning "come back" or "come again." To quote:

> "The history of Lukutate is one of ancient lore and modern science, oriental jungle and European laboratory. The basic ingredients are certain Indian fruits—fruits which grow in highly elevated parts of the Malayan Archipelago, Java, Borneo, Sumatra, and neighboring countries. For hundreds of years these extraordinary fruits have been known to the natives. Wherever they have grown, they have been eagerly sought by tribes from far and near. And where the fruits are found and eaten, the most remarkable physical strength and beauty is the rule.
>
> "In addition to the humans who seek out these extraordinary fruits, animals of all sorts feed on them regularly. Elephants, monkeys, the meat-eating tigers and panthers, and even parrots search out and devour these life giving fruits."

Interesting, if true, but hardly enlightening. An aphrodisiac slant pervades the advertising. We are told that Lukutate has captured a "revitalizing vitamin" and:

> "The number of people rejuvenated through transplanting of monkey glands is limited. The *question* therefore arises: *Are we to give up all hope?* The *answer* is *'Certainly not.'*
>
> "All previous experiments in the direction of rejuvenation have been eclipsed by the great discovery of a preparation called Lukutate, containing fruits coming from India. Encouraged by the amazing rejuvenating effects witnessed in animals, the logical act was to try the effect of these Indian Fruits contained in Lukutate on human beings."

The main thesis of the Lukutate advertising is that the product, or rather the raw material from which the product is made, has been known for centuries in the East, but that it remained for "a practical German" to bring this "marvel" to "civilization." We are told, further, that Lukutate was a revolutionary sensation in Germany and its fame has spread all over Europe.

ALLEGED GERMAN MEDICAL TESTIMONY

An imposing array of German and Austrian testimonials forms part of the "come-on" advertising of Lukutate. Several pages are devoted to what is described as the "Medical Praise of Lukutate." In this we are told that the following men have enthusiastically endorsed Lukutate:

Hofrat Professor Dr. Med. S. G. Lipliawsky, Berlin:—Is claimed to have given Lukutate to a number of patients and to have reached the conclusion that it invigorates all life functions and is, beyond doubt, a gland-invigorating medium.

Dr. med. Scholze, County Examiner, Werdau, Germany:—Is said to have used Lukutate on himself and found it to have given him remarkable relief from his "troubles."

Dr. A. Dietze, Berlin:—Is said to consider Lukutate most valuable in all cases of "blood congestion" and to have the "pronounced effect of conserving heart activity" without increasing blood pressure and to believe that Lukutate is "one of the most precious fruits of humanity."

Dr. Edler von Walck, Berlin-Schoeneberg:—Is said to have taken Lukutate daily and proved that it has a rejuvenating action and to have caused his "very gray hair become dark."

Dr. Victor Fischer, Chief Physician, Vienna Hospital:—Is said to consider that Lukutate produces a "gradual rejuvenation of the entire organism."

Dr. Ludwig Sternheim, Specialist in Blood Diseases, Hanover, Germany:—Is claimed to have reported that after extended use, there was an increase in vitality and efficiency, more cheerful spirit, great self-confidence, improved sleep and appearance.

Professor Dr. Hans Friedenthal, Berlin-Charlottenburg:—Quoted as stating that he has convinced himself, through experiments, that the large part of the claims for Lukutate are justified and that its introduction will enrich medical science.

Dr. P. Schneller, City Hospital, Stuttgart-Cannstadt, Germany:—Is said to state that Lukutate is now being praised by all physicians who have tried it.

Dr. Fritz Hempel, Rheydt i/Rhld., Germany:—Reported as prescribing it for a forty-six-year-old woman who, in three months, looked not older than thirty-five years.

Dr. A. Bramer, Ranking Military Staff Physician, Berlin:—Is said to consider the composition of Lukutate "fortunate" and that it actually invigorates the glands and acts favorably on the general physical condition.

GERMAN MEDICAL LITERATURE ON LUKUTATE

So much for the testimonials as published by the Lukutate Corporation of America—for American consumption. A study of German medical literature, however, leads one to wonder

December, 1928 39

Astounding New Physical Power, New Clearness of Skin, New Sparkle to Eyes—Through Glandular Vigor in the

"Revitalizing Fruits" Discovered in India.

SEND FOR THE INTERESTING BOOKLET—FREE

Found By Eminent Explorers, Now the "Rage" of Europe. Lukutate Fruits Publicly Praised by Many of the World's Most Eminent Physicians and Scientists

A combination of unusual East Indian fruits, made into a health food called LUKUTATE, has swept Europe with sensational success and is being demanded by American men and women faster than it can be imported.

It was only after receiving the tremendously enthusiastic reports of such explorers as the noted German, Baron von Gagern; the American Montagnani; the world's foremost scientific naturalists, *Prof. Ernst Haeckel*, and the Englishman, Alfred Russell Wallace; and others that the medical world began to ask:

"What can there be in these exotic fruits of India, Java, Borneo and Sumatra that brings such astounding physical power and attractiveness?"

Lukutate Captures a "Revitalizing Vitamin"

Professor Dr. F. Lange, of the University of Stuttgart, after extensive and thoroughly scientific research in the study and analysis of Lukutate, made an announcement which has created a sensation in the public. The scientist has found, he says in this, Lukutate captures what will probably be called a revitalizing vitamin, which is found in the Indian fruits. This vitamin, he declares, is made from the reproductive hormone. The exact function of this vitamin is the most vital thing in the human body, he says, and it is responsible for the glorious rejuvenation experienced, the scientist declares.

"Naturally Strengthens Virility"

Richie Chief Physician, Vienna Hospital

Dr. Victor Fischer, the eminent Austrian physician, states that under the beneficial influence of Lukutate a gradual revitalizing of the entire organism takes place.

The further comments of Dr. Fischer, Professor Dr. Hans Friedenthal, and Dr. Ludwig Sternheim, famous German specialist in blood diseases, Dr. C. Muhlbach of the Council, Colonial Army Doctor, and Dr. J. Dietze, Director of the Surgical Clinic of a famous University, Russia, and others are found in the fascinating literature sent free on request.

If the nervous strain of business and social life is telling on you, if you are losing ground in your fight through, Flabby and Run-by. If your purely developed organism is losing out in the world for much you lack Nerve Force and Physical Energy, you should send for the free booklet describing the new road to Youth and Vitality in Lukutate.

Many of the cases described in this booklet are completely satisfactory. The Lukutate Fruits are now being introduced in this country, but only in a very limited way. Therefore, to acquaint the public with the wonderful results that can be secured direct from the Essential oils of the Lukutate Fruits, a booklet has been published which tells in full and complete detail the whole story. You do not obligate yourself in any way in sending for this booklet and information. You do not even have to write a letter. Simply fill in the coupon below. Then the secret of the wonders of this amazing Indian Fruit will be revealed.

Lukutate Corporation of America, Information Dept. D, 250 Fourth Avenue, New York

Please send me complete information, concerning Lukutate, made of the revitalizing fruits of India.

PRINT PLAINLY

Full Name .....

Address .....

whether the exploiters of Lukutate in this country have correctly quoted the German and Austrian physicians. Articles in German medical and pharmaceutical journals indicate that physicians in that country are far from being as enthusiastic over Lukutate as the American public is led to believe. It appears from these sources that Lukutate, in Germany, was exploited by one Wilhelm Hiller of Hanover; that it was advertised in Germany on the basis of rejuvenation claims; that it was put on the German market in the form of a fruit jelly, a bouillon cube, a marmalade and a "berry juice." The results of official investigation of Lukutate in Austria were to the effect that the main ingredients were frangula (buck thorn) and cascara sagrada and that, therefore, the Lukutate products were to be regarded as medicinal preparations and their sale seems to have been prohibited in Austria! Another article on Lukutate in the *Apotheker-Zeitung*, Feb. 11, 1928, by Scheer, in which the nostrum is used as an illustration of the need of a law to

protect the public and pharmacy, Dr. Scheer closes with the statement:

"If laws were created that would allow a portion of the public wealth wasted on swindle preparations [*Schwindelpräparate*] to flow into the bloodless veins of the struggling pharmacists, it would be a blessing for legitimate pharmaceutical business, and would attain what we wish for ourselves and for the German people."

AMERICAN TESTIMONIALS

In the United States testimonials for Lukutate seem, at present, to be much less imposing. Most of them bear no name or address. Two are featured and dignified by being reproduced in facsimile; one of these is from a layman, the other from an American physician. The layman is one S. W. Rundle of Philadelphia; the physician is Charlotte C. West of New York City. Dr. West's testimonial is given all the dignity of a full-sized photographic facsimile. In it the doctor states that she is convinced that in Lukutate "we are in possession of one of nature's wonderful secrets for restoring bodily vigor" and for combating disease. She states, further, that she has used Lukutate herself and reduced her blood pressure from 190 to 168 "in an incredibly short time." She also declares that she is "stronger and more vigorous than in the past ten years." These results, she states, are attributable solely to the use of "Lukutate Tincture."

At this point, it should be said that Lukutate on the American market comes in four forms: "Tincture," "Fruit Preparation," "Lukutate Purum" ("a tasty marmalade"), and "Lukutate Concentrate" ("a sugarless marmalade"). Dr. West was written to and asked whether the testimonial being used by the Lukutate concern was genuine and she was also asked, if it was genuine, whether she could tell us just what Lukutate is. Dr. West replied that her testimonial but "mildly expresses the effects attained" in the use of Lukutate on herself. Dr. West gave us no information regarding the composition of Lukutate other than to state that durian was the chief fruit employed in its manufacture. No information of this kind is given in the Lukutate advertising, nor is there any information in the advertising regarding the identity of the other alleged fruits said to be contained in Lukutate, nor of the material that comprises the balance of the Lukutate products.

WHAT IS LUKUTATE?

Dr. West stated, further, in her letter that the Lukutate concern had assured her that they would welcome any communication from the American Medical Association and freely acquaint the Association with every detail of their product. Accordingly, a letter was written to the Lukutate Corporation on October 31, 1929, stating that a number of inquiries had been received relative to the product and that the advertising matter seemed to give no information regarding the composition of Lukutate. The Lukutate Corporation was asked if it cared to give any information, so that the Bureau of Investigation might be in a better position to answer future inquiries. The reply came back that the president and vice-president of the corporation were both in Germany but were expected home by the tenth of November, at which time they would deem it a privilege to supply the American Medical Association with full information as to what Lukutate is.

About two weeks later the Bureau of Investigation received a letter from the president of the Lukutate Corporation, stating that they were preparing a report but were "awaiting the completion of three scientific reports prepared by the Pease Laboratories" of New York City, who had promised to submit them that same week. The president stated further that, when these reports had been received, they would be submitted to the American Medical Association together with reports from the universities of Berlin, Vienna and Prague. This was on November 18, 1929. At the time this article goes to press—over two months later—no further communication has been received from the Lukutate Corporation.

In the meantime some of the Lukutate products were purchased direct from the Lukutate Corporation and several specimens of Lukutate Tincture turned over to the Chemical Laboratory of the American Medical Association for analysis. The Laboratory report follows.

LABORATORY REPORT

"Several bottles of Lukutate Tincture (Lukutate Corporation of America, New York City) in unopened, original packages, were submitted to the A. M. A. Chemical Laboratory for examination. In each package there was a one-ounce amber bottle containing 33 cc. (approximately onefluid ounce) of a light yellowish-brown liquid with some suspended material, having an aromatic alcoholic odor, resembling fruit essences. On placing a few drops on the tongue there was noted a marked burning sensation (resembling alcohol), followed by a faintly bitter taste, suggestive of an emodin-bearing drug; the reaction of the mixture to litmus was decidedly acid. The specific gravity at 20 C. was 1.049.

"Lukutate, according to an accompanying circular, 'is a scientifically prepared accessory food based upon certain vitamin rich fruits of India . . . made up in concentrated, tasty form for regular use in the daily diet.' According to the German pharmaceutic literature, the Lukutate preparations are alleged to be made from Indian fruits, such as durian, salpamisri, amlok, papaya, sawu, tamarind, etc. The directions state:

"'*Lukutate Tincture*—High potency—does not contain sugar. Practically tasteless. Twenty drops in two tablespoonfuls of water or vichy.'

"The label bore the legend: "Contains 49% Alcohol by volume." Qualitative tests indicated the presence of alcohol, anthraquinone derivatives, suggestive of senna, cascara sagrada, or frangula (buckthorn), etc., an organic substance readily reducing Fehling's solution, suggestive of sugar (fructose). Heavy metals, alkaloids, glycerin and organic acids were not found. The total solids amounted to 6.3 per cent, consisting essentially of a thick, reddish-brown, syrupy mass. The amount of ash derived from the preparation was 0.1 per cent; most of the ash consisted of silica (sand) and sodium sulphate.

"From the results of the tests, it appears that Lukutate Tincture is essentially an aqueous-alcoholic solution of plant extractives, one of which is indicative of an emodin-bearing drug, such as cascara, senna or buckthorn, and containing a small amount of fruit sugars (fructose).

"The work done in the A. M. A. Chemical Laboratory failed to reveal the presence of a therapeutically indicative drug besides the laxative (emodin-bearing) substance and the alcohol used as a solvent."

From the chemists' report it appears that Lukutate Tincture consists of a laxative in a 49 per cent alcohol solution. In closing, reference should be made to a letter received from an attorney in Switzerland on the subject of Lukutate. This attorney stated that Lukutate had been manufactured in Hanover by one Hiller; that the product had been a great financial success but that the sale of it had been prohibited in "different European countries," and that an order of arrest had been issued against Hiller and that he had had to flee from Germany. The attorney wanted to learn whether Lukutate had been approved by the American Medical Association and also whether its sale was permitted in America. The reply said that, unfortunately, the sale of the product *was* permitted in the United States but that it had not received the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

How long will Lukutate last in the United States? That will depend on the amount of money that the Lukutate Corporation of America is willing to spend in advertising!.

MEDICAL PUBLICITY BUREAU—A CORRECTION

In this department of THE JOURNAL, December 7, 1929, there was published an article on the Medical Publicity Bureau. The information given relative to the personnel of the Bureau was based on two reports—one furnished by the National Better Business Bureau and the other by the Department of Health of the City of New York. In the course of the article these statements appeared:

"The National Better Business Bureau reported . . . that Dr. James Macbeth and Dr. William J. Robinson were the principals . . ."

"The report further said that Dr. William J. Robinson of the *Critic and Guide* was the principal stockholder . . ."

The first of the two paragraphs quoted above was, as is evident, from the National Better Business Bureau, and the official who furnished us with it has made an affidavit that his statement was based on information given him by telephone on November 25, 1929, by some one connected with the Medical

Publicity Bureau. The second of the two paragraphs refers to a report from the Health Department of the City of New York made in 1925 by a careful and conscientious physician connected with the Department. This physician has furnished an affidavit that his report was based on statements made verbally to him by the man who was, at that time, president of the Medical Publicity Bureau.

Dr. Robinson has notified THE JOURNAL that "at no time has he been in any way whatever, directly or indirectly, closely or remotely, actively or passively, connected with the Medical Publicity Bureau" and that "at no time has he held any stock in said Medical Publicity Bureau."

These facts are given in justice to Dr. Robinson and to THE JOURNAL.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SPURS FOLLOWING AMPUTATION OF TIBIA

To the Editor:—Will you please state the approximate percentage of occurrence of spurs following amputation through the middle of the tibia in children? Also please give authority. Kindly omit name.

M.D., Illinois.

ANSWER.—No data showing the approximate percentage of occurrences of spurs following amputation through the middle of the tibia in children have been found in the current literature. The occurrence of spurs in general following amputation varies with the treatment of the bone at the time of the operation and the presence or absence of infection. The development of a spur is a manifestation of the proliferative reaction of bone to infection or injury. In infected stumps they occur almost uniformly. In noninfected stumps the development of osteophytes represents an attempt at repair or callus formation. The process is influenced to a considerable degree by the extent of injury to the periosteum, whether this has been stripped up extensively or not. They may be due to the presence of small bone fragments which proliferate. The aperiosteal method of treating the bone developed by Bunge is the one best calculated to prevent their development. By this technic a cuff of periosteum is removed from the distal end of the bone, and the marrow is also curetted out for an equal distance in order to remove the endosteum. The aim is to eliminate as completely as possible the tissue elements that are capable of proliferation, and also to reduce the blood supply of the end of the bone so that osteophytic outgrowth may be prevented. This method seems to accomplish what is intended, and it has the advantage of simplicity.

EFFECTS OF CINCHOPHEN

To the Editor:—Please describe the effects of too long continued or overdosage of cinchophen. I have a patient who has a patchy eruption that is itchy, especially at night. He has never had such as this until now after taking five days' treatment with the drug named. He had taken it five days and after intermission had started another series when it began. Please omit my name.

M.D., Ohio.

ANSWER.—Purpuric, urticarial, or scarlatiniform eruptions have been reported by many observers. They may occur with or without edema. Gastro-intestinal disturbances, from epigastric discomfort to acid eructations and heartburn, are the commonest expression of intolerance to cinchophen. These may be avoided by the giving of an abundance of water with the drug, and 1 Gm. of sodium bicarbonate, though the latter should be given separately and not mixed with the drug. By using neocinchophen, one may avoid usually the symptoms of gastric irritation. Sometimes cardiovascular disturbances have been noted, such as dizziness, weakness in the legs and palpitation. Except for the appearance of a transient trace of albumin in the urine, evidence of harm to the kidneys is unusual. With large doses, casts and white blood cells may also appear. There are patients who react to cinchophen with general malaise, headache and even fever. Evans and Spence report the case of a woman cured of gout in spite of developing fever each time cinchophen was administered. By far the most serious results of cinchophen intoxication result from injury to the liver, which may even go on to a fatal acute yellow atrophy. The first definite symptom of liver poisoning is loss of appetite. This should be sufficient indication to stop giving this drug. Unaccountable sleepiness appears next. If this warning is not heeded, and even if it is, this may be followed by jaundice, which may not appear until a week or two after the drug has been discontinued and then persist for months. Hence, it is generally best to give the drug only on three days each week and to keep the patient taking cinchophen under observation. When nutrition is poor and there is a suspicion of poor glycogen reserves in the liver, an ample carbohydrate diet should be given.

INTERCOSTAL PAIN AFTER HERPES ZOSTER

To the Editor:—What is best recognized as the most effective treatment for the neuritic pain of shingles—herpes zoster, particularly for the post-eruption stage? Following the usual surgical care of the eruption, with skin healed well, the following have been used with slight success: zinc phosphide, amidopyrine, codein, ultraviolet radiation, diathermy, x-rays and potassium iodide. My patient is still a wreck from constant intercostal pain. Differential diagnoses have ruled out other lesions. Kindly omit name.

M.D., California.

ANSWER.—The postherpetic pain is one of the most intractable types. It is impossible by means of medication to relieve it successfully as a rule and it does not cease spontaneously. Herpes zoster and its associated neuritic pain is probably due to a virus infection of the posterior root ganglion—a ganglionitis. There is one procedure which is difficult in technic but is quite often followed by success, and that is the injection of the ganglions supplying the affected skin segment. Usually three or more ganglions must be injected to relieve the pain over one segment. The injection is difficult and rather dangerous in that the ganglions alone must be injected with alcohol. An alternative procedure is operative and consists in section of the same number of ganglions. High voltage roentgen therapy has at times been of value when applied to the affected ganglions and should be tried.

FEEDING OF EGG WHITE

To the Editor:—Please give me your opinion with reference to omitting the white of egg in milk and egg feedings. Some physicians assert that raw white of egg should never be given. As yet I have never had an adult patient who had an idiosyncrasy (so far as I could determine) for white of egg. Unless such feedings do cause unfavorable results, is there any reason for questioning the feeding of egg albumin? Kindly omit signature.

M.D., South Carolina.

ANSWER.—In compounding a formula for an infant's diet, essential food constituents are necessary. A large number of food substances undoubtedly may be fed which, while tolerated by a goodly percentage of infants, still do not materially contribute to their growth and development. The yolk of an egg is much richer than the white in the calcium, phosphorus and iron compounds and also in vitamin content. The question of idiosyncrasy to egg white is secondary in importance, but with little evidence in favor of feeding egg white it seems desirable to avoid a possible reaction by its omission.

COD LIVER OIL, VIOSTEROL OR SUNLIGHT FOR RICKETS

To the Editor:—Kindly inform me if the administration of cod liver oil or viosterol to infants and children would be as effective in the prevention and treatment of rickets as the giving of such medication supplemented by the use of ultraviolet therapy and vice versa. Kindly omit name.

M.D., Alaska.

ANSWER.—Cod liver oil, viosterol and ultraviolet rays are generally accepted as specific agents in the prevention and cure of active rickets in infants. Their relative merits are still under investigation. Cod liver oil contains the valuable vitamin A in addition to vitamin D. Viosterol is of advantage because of the ease of administration and its concentration. Reports favor its use because of the promptness of its action. Its standardization and dosage presented a problem not as yet completely agreed on. Ultraviolet rays are undoubtedly a valuable therapeutic agent when under controlled supervision. Their effect on general nutrition and resistance as well as on the calcium retention is good. Their use to the exclusion of vitamin D or viosterol seems unwise. A combination seems most desirable when sunshine is not available.

"GRAYING OF THE HAIR"

To the Editor:—In Queries and Minor Notes recently (THE JOURNAL, October 19) there was a communication asking whether there is any known remedy for the condition in which gray and white hair becomes gradually yellow and unsightly. A dear old lady with most beautiful white hair told me that hers had this tendency but that she kept it in its unusually attractive condition by adding a small amount of ordinary washing bluing to the water with which she rinsed her hair after shampooing it. I trust that this suggestion may be helpful.

M.D., Pittsburgh.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 4, 1930. Sec., Dr. Harry C. DeVighne, Juneau, Alaska.

CALIFORNIA: Los Angeles, Feb. 3-6, 1930. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento, Calif.

CONNECTICUT: New Haven, Basic Science, Feb. 8, 1930. State Board of Healing Arts, 1895 Yale Station, New Haven, Conn.

NATIONAL BOARD: Parts I and II, Feb. 12-14, 1930. In all centers where there are five or more candidates. Dir. Mr. E. S. Elwood, 225 So. 15th St., Philadelphia, Pa.

NEBRASKA: Omaha, Feb. 4-6, 1930. Sec., Mr. Ernest M. Pollard, Lincoln, Neb.

NEW YORK: New York City, Albany, Syracuse, Buffalo, Jan. 27-30, 1930. Chief, Mr. H. J. Hamilton, Educational Bldg., Albany, N. Y.

PHILIPPINE ISLANDS: Manila, Feb. 11, 1930. Sec., Dr. Jose V. Gloria, 341 Ronquillo Station, Cruz, Manila, P. I.

PORTO RICO: San Juan, March 4, 1930. Sec., Dr. Siego A. Biascoechea, 3 Allen St., San Juan, P. R.

VERMONT: Burlington, Feb. 11-13, 1930. Sec., Dr. W. Scott Nay, Underhill, Vt.

WYOMING: Cheyenne, Feb. 3, 1930. Sec., Dr. W. H. Hassed, State Capitol Bldg., Cheyenne, Wyo.

Iowa June Examination

Mr. H. W. Grefe, director of examinations and licensure of the Iowa Department of Health, reports the written examination held at Iowa City, June 4-6, 1929. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty-five candidates were examined and passed. Eight physicians were licensed through reciprocity with other states. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Per Cent
State University of Iowa College of Medicine	(1929) 78.5, 78.7, 79.6, 79.9, 80, 80.5, 80.5, 81, 81.2, 81.2, 81.9, 81.9, 82, 82.2, 82.9, 83, 83.1, 83.2, 83.2, 83.6, 83.9, 84, 84.1, 84.1, 84.3, 84.6, 84.6, 84.7, 84.7, 84.7, 84.7, 85.1, 85.1, 85.1, 85.2, 85.4, 85.4, 85.5, 85.6, 85.6, 85.7, 85.9, 85.9, 85.9, 85.9, 85.9, 86, 86.1, 86.2, 86.5, 86.5, 86.6, 86.7, 87.1, 87.1, 87.2, 87.2, 87.2, 87.3, 87.6, 87.9, 87.9, 87.9, 88, 88.3, 88.3, 88.4, 88.6, 88.7, 89, 89.2, 89.5, 90, 90.2, 90.6, 90.7, 90.9, 91.5, 91.5, 91.7, 92.1, 93.7	
Washington University School of Medicine	(1929)	89.6
Creighton University College of Medicine	(1929)	89.7

PASSED

College	Year Grad.	Reciprocity with
University of Minnesota Med. School	(1924) Illinois, (1925)	N. Dakota
St. Louis University School of Medicine	(1927)	Missouri
Creighton University College of Medicine	(1928)	Nebraska
Lincoln Medical College	(1910)	S. Dakota
University of Nebraska College of Medicine	(1928)	Nebraska
Miami Medical College	(1909)	Ohio
University of Wisconsin Medical School	(1928)	Wisconsin

Hawaii October Examination

Dr. James A. Morgan, secretary of the Board of Medical Examiners of Hawaii, reports the written examination held at Honolulu, Oct. 14-17, 1929. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Three candidates were examined and passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
Northwestern University Medical School	(1910)	87.2
Indiana University School of Medicine	(1928)	81.4
University of Nebraska College of Medicine	(1928)	78.3

Massachusetts July Examination

Dr. Frank M. Vaughan, secretary of the Board of Registration in Medicine of the State of Massachusetts, reports the oral, written and practical examination held at Boston, July 9-11, 1929. The examination covered 13 subjects and included 70 questions. An average of 75 per cent was required to pass. One hundred and fifty-one candidates were examined, 101 of whom passed and 50 failed. The following colleges were represented:

FAILED

College	Year Grad.	Per Cent
Georgetown University School of Medicine	(1929)	81.1, 85.2
Bowdoin Medical School	(1916)	79.9
University of Maryland School of Medicine	(1927)	86.7

PASSED

College	Year Grad.	Per Cent
Boston University School of Medicine	(1929)	76.1, 76.6, 78, 81.9, 82.5, 82.8, 83.7, 85.4, 87.5
Harvard Medical School	(1926)	83.7, (1927) 81.2, 89.5, (1928) 87.5, (1929) 79.8, 81.7, 82.9, 83.1, 83.2, 84.2, 84.5, 84.5, 84.7, 86
Middlesex College of Medicine and Surgery	(1926)	75.2, (1927) 81, 75, 75.6, (1928) 75.2, 78.4
Tufts College Medical School	(1928)	78.2, 79, 83.5, 85.2, 85.4, 87.5, 89.7, (1929) 77.1, 78.5, 79.3, 79.3, 79.3, 80.5, 80.7, 81.1, 81.1, 81.4, 81.4, 81.4, 81.8, 82.8, 83.4, 84, 84.3, 84.4, 85.5, 85.8, 86.2, 86.9, 87.4, 87.5, 87.7, 88.5, 88.5, 88.8, 89, 90.8
University of Michigan Medical School	(1899)	75,
St. Louis University School of Medicine	(1927)	76.7
Creighton University School of Medicine	(1911)	78
Cornell University Medical School	(1923)	81.2
Jefferson Medical College	(1926) 85, (1929)	81
University of Pennsylvania School of Medicine	(1926)	82
Baylor University College of Medicine	(1925)	85
University of Vermont College of Medicine	(1929)	77.2, 77.2
University of Virginia Department of Medicine	(1922)	80.8
McGill University Faculty of Medicine	(1928)	81.2
University of Montreal Faculty of Medicine	(1929)	76
Coimbra University Faculty of Medicine	(1927)	82.5
Royal University of Rome Faculty of Medicine	(1922)	75.9*
Nondescripts	75, 76, 76.5, 82.7, 83,	86
Osteopaths	76.2, 78, 80, 81.3, 84.1, 84.3,	84.7

PASSED

College	Year Grad.	Per Cent
Chicago Medical School	(1925)	65
Boston College of Physicians and Surgeons	(1916)	65.4
Middlesex College of Med. and Surg.	(1921) 68, (1923) (1927) 61.8, 67.1, 71.6, 68.2, (1928) 41.6*	60.3,
Tufts College Medical School	(1929)	65.6
Kansas City University College of Phys. and Surgs.	(1927) (1928) 50.5	57.9,
St. Louis University College of Phys. and Surgs.	(1923)	58.3
University of West Tennessee College of Medicine	(1913)	66.3
University of Montreal Faculty of Medicine	(1927)	13.7†
University of Athens Faculty of Medicine	(1914) 50.8, (1917)	68.3
University of Rome Faculty of Medicine	(1925)	41*
University of Berne Faculty of Medicine	(1928)	63.7*
Nondescripts	58.9, 61.7, 64, 66.2, 68, 68.9, 69.2, 72.4,	73.5
Osteopaths	57.5, 62.3, 62.5, 62.9, 65.2, 66.4, 67, 67.2, 67.6, 71.1, 71.4, 71.5, 71.5, 71.7, 72, 72.4, 72.5, 72.5, 72.8	69.7,

* Verification of graduation in process.
† Incomplete examinations.

Michigan October Examination

Dr. F. C. Warnshuis, secretary of the Board of Registration in Medicine in the State of Michigan, reports the written examination held at Lansing, Oct. 8-10, 1929. The examination covered 14 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-five candidates were examined and passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
College of Medical Evangelists	(1929)	86
Yale University School of Medicine	(1923)	88
Georgetown University School of Medicine	(1929) 85,	86
Loyola University School of Medicine	(1929)	86*
Northwestern University Medical School	(1929) 80,* 83,* 84,	85*
Rush Medical College	(1927) 85, (1929) 82,*	87*
University of Michigan Medical School	(1929)	84
St. Louis University School of Medicine	(1928)	86
Temple University School of Medicine	(1927)	85
Woman's Medical College of Pennsylvania	(1926)	81
Marquette University School of Medicine	(1929)	85*
Queen's Univ. Faculty of Med.	(1922) 83, (1927) 83, (1928)	85
University of Montreal Faculty of Medicine	(1925)	79
University of Toronto Faculty of Med.	(1913) 78, (1926)	87
University of Western Ontario Faculty of Medicine	(1914)	79
University of Berlin Faculty of Medicine	(1929)	78†

* Applicants have been granted their M.B. degree and will be granted their M.D. degree on completion of one year's internship.
† Verification of graduation in process.

Porto Rico September Examination

Dr. Diego Biascoechea, secretary of the Board of Medical Examiners of Porto Rico, reports the written and practical examination held at San Juan, Sept. 3, 1929. The examination covered 17 subjects and included 75 questions. An average of 75 per cent was required to pass. Seven candidates were examined, 6 of whom passed and 1 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent
Georgetown University School of Medicine	(1929) 83,	86.4
George Washington University Medical School	(1929)	85.3
Columbia University College of Phys. and Surgs.	(1929)	88.4
Jefferson Medical College	(1929)	91.1
University of Pennsylvania School of Medicine	(1929)	82.6

FAILED

College	Year Grad.	Per Cent
College of Physicians and Surgeons, Boston	(1927)	69.2

Book Notices

A SYSTEM OF BACTERIOLOGY IN RELATION TO MEDICINE. Volume III. By W. Bulloch, P. Fildes and others. Medical Research Council. Cloth. Price, £1 1s. net. Pp. 413, with illustrations. London: His Majesty's Stationery Office, 1929.

A SYSTEM OF BACTERIOLOGY IN RELATION TO MEDICINE. Volume IV. By H. J. Bensted, W. Bulloch, L. Dudgeon, A. D. Gardner, E. D. W. Greig, D. Harvey, W. F. Harvey, T. J. Mackie, R. A. O'Brien, H. M. Perry, H. Schütze, P. Bruce White, and W. J. Wilson. Medical Research Council. Cloth. Price, £1 1s. net. Pp. 482. London: His Majesty's Stationery Office, 1929.

Under the auspices of the British Medical Research Council comes this system of bacteriology in relation to medicine—the first work in English at all comparable to some of the great German systems in the fundamental fields of medicine. It is to be complete in nine volumes of approximately 400 pages each, offering a comprehensive survey of our present knowledge of bacterial organisms with special relationship to medical work. Almost a hundred British bacteriologists are cooperating, each one offering subjects in which he has been for long interested.

Volume III contains contributions from seventeen bacteriologists and is especially interesting because it deals with problems of general interest, such as the bacteriology of water, milk, foods, soil, the bacterial diseases of insects, plants, the organisms of plague, *Bacillus tetani*, and gas gangrene. Since each of the articles is written by an authority who has given special study to his topic, it may be considered reliable.

The books are printed in large type, sufficiently varied to indicate matters of importance. The economic aspects are fully elaborated. An article on *Bacillus tetani* considers not only all the bacteriologic points of view but also the method of infection, the symptoms of the disease throughout the body, and the use of antitoxin. The records of the war have been fully called on in developing this material. In the study of *Bacillus botulinus* by Drs. Bulloch and O'Brien, the American literature, which is extensive, has been fully considered but there is little or nothing relative to development of the specific antitoxin, which has been given much consideration by American authors. The article on bacterial food poisoning by Savage is too brief for adequate consideration of the newer work in this field. There is but one reference later than 1926, and the book on this subject by Damon is wholly neglected.

Volume IV is devoted particularly to the colon-typhoid group, including *Bacillus typhosus, Salmonella*, dysentery, colon, cholera and pasteurella trevisan organisms. These discussions occupy from sixty to a hundred pages each and are quite up to the excellent considerations of volume III. It is recognized that both the vaccine and the serum treatment of typhoid are ineffectual either for treatment of the disease or for elimination of carriers.

HEREDITY AND PARENTHOOD. By Samuel Christian Schmucker, Ph.D., Sc.D. Cloth. Price, $2.50. Pp. 322, with 43 illustrations. New York: Macmillan Company, 1929.

This is another volume planned to enlighten the intelligent public as to the secrets of eugenics and heredity. The author traces the evolution of the world as a whole and man's place in the great scheme of life. He then recites in an easily readable manner the story of Mendel's conception of evolution but finds himself soon, as have all others who have gone into this field, in a maze of intricate detail through which few readers will be able to follow him. His descriptions of scientific research on the guinea-pig and fruit fly are interesting, as are also his discussions of heredity on the farm and the stories of such interesting families as the Jukes and the Kallikaks. Chapters on inheritance of health, disease and criminality are an interesting presentation of current points of view. The second half of the volume is the story of parenthood told first through plants and animals, then fishes, frogs, birds and mammals. There are chapters on children's love affairs, the age of romance, and "What Shall We Tell Our Children?" The point of view of the author is distinctly old fashioned. He thinks that boys and girls are just as puritanical and innocent as they were when he was a boy, fifty years ago, and that there is no more irregular life than there was at his time. He ought to visit around more in the big cities, and he would find, no doubt, that things have changed considerably.

THE GREAT APES: A STUDY OF ANTHROPOID LIFE. By Robert M. Yerkes, Professor of Psychobiology in Yale University, and Ada W. Yerkes. Cloth. Price, $10. Pp. 652, with 172 illustrations. New Haven: Yale University Press, 1929.

Here in one volume are collected all the facts concerning the history, habits of life, anatomy, physiology, pathology and social relations of the anthropoid apes. These are the monkeys nearest to man in appearance, habits and physiologic functions. There are many illustrations, innumerable quotations from the literature and the records of special investigations which indicate how closely allied the anthropoids really are to man and woman. The great question as to whether or not these apes talk receives adequate consideration. Apparently some species can be induced to make sounds indicating their desires. The book is exceedingly well written and handsomely printed.

STRÜMPELL-SEYFARTH LEHRBUCH DER SPEZIELLEN PATHOLOGIE UND THERAPIE DER INNEREN KRANKHEITEN FÜR STUDIERENDE UND AERZTE. Von Dr. Med. et Phil. C. Seyfarth, a. o. Professor für innere Medizin der Universität Leipzig. Band II. Twenty-eighth edition. Paper. Price, 25 marks. Pp. 991, with 221 illustrations. Leipzig: F. C. W. Vogel, 1929.

This second and final volume, as in other editions, is an exposition of the diatheses and diseases caused by abnormal nutrition, "avitaminoses"; of diseases of the urinary organs, joints, muscles, blood, glands of internal secretion and the nervous system. The alterations are not numerous. In spite of assurance in the preface that the chapter on diseases of the vegetative nervous system is new, apparently it is identical with that in the twenty-seventh edition. Better illustrations replace some of those formerly used; about sixteen are new, and half as many appearing last year are omitted. Plate I, roentgenographic illustrations of bladder and renal stones, is greatly improved. By reducing some paragraphs of the previous edition (reviewed, Jan. 12, 1929) to fine print and some of the illustrations to a smaller size, this edition has only two more pages than the last. Considerable of the new information added to paragraphs here and there pertains to therapy and, from an American point of view, it seems unfortunate that many of the remedies advocated are German proprietary preparations and that intravenous administration is frequently recommended. The title "Das ideopathische Myxödem" of the previous edition is changed to "Das Myxödem der Erwachsenen (Spontanes oder ideopathisches Myxödem." With this alteration are enlarged, enriched and rewritten accounts of the etiology and symptomatology of this disease. Now and then Hodgkin's disease is most pronounced in or limited to the lymphoid tissue of the stomach or bowel, to the abdominal, mediastinal or retroperitoneal lymph nodes, or to the spleen. A new paragraph is introduced to comment on these unusual forms of this strange disease. Like the average case of Hodgkin's disease, some of these rarer varieties are often accompanied by fever. As a consequence, they may completely baffle clinical recognition or prove singularly difficult to diagnose. As a supplement to this chapter on the lymphogranulomatous diseases, the systemic hyperplasias of the lymph nodes caused by syphilis and tuberculosis are, for the first time, specially and separately presented. Similar slight changes have been made in other parts of this volume. This great treatise on internal medicine is annually reprinted rather than revised, since these small yearly substitutions of modern for outworn beliefs suffice to maintain its supremacy.

THE EVOLUTION OF EARTH AND MAN. By Lorande Loss Woodruff, George Howard Parker, Richard Swann Lull, and others. Edited, with a preface, by George Alfred Baitsell, Professor of Biology in Yale University. Cloth. Price, $5. Pp. 476, with 83 illustrations. New Haven: Yale University Press, 1929.

The members of the faculty of Yale, Harvard and Princeton have cooperated to present the story of evolution from the various points of view included in their special subjects. The facts are accurately presented and handsomely illustrated. The authors speak with the facility that comes of frequent presentation. Sections of particular interest to the physician are those on the evolution of the nervous system, of intelligence and of culture, and on the relationships of climate to changes in civilization. As is typical of every publication issued by the Yale University Press, this book is a pleasure to read, to hold and to have.

Medicolegal

Rupture of Artery and Accident Insurance

(Home Benefit Association of Paris, Texas v. Smith (Texas), 16 S. W. (2d) 357)

The appellee was the beneficiary named in an insurance policy issued to her husband by the appellant. Under the policy the appellant bound itself to pay a double indemnity if the death of the insured resulted "from and within thirty days of an accident." The district court, Lamar County, gave judgment for the appellee for the double indemnity and the appellant appealed to the court of civil appeals of Texas, by which the judgment of the district court was affirmed.

The evidence seemed to establish that the death of the insured was due to a rupture of an artery or blood vessel while he was cranking an automobile. He died within about ten minutes thereafter. The appellant requested the district court to instruct the jury that, if it found that cranking the automobile caused one of the blood vessels of the insured to be ruptured, it further find whether or not the rupture of the blood vessel was produced by a diseased condition of the insured. This request was based on evidence that the insured had been a "hard drinker" at one time in his life and on testimony of physicians that cranking an automobile ordinarily would not cause a rupture of a blood vessel if it was not in a diseased condition. There was no stipulation in the insurance policy, said the court of appeals, against liability if death was caused by accident and disease combined. "Where a man is so afflicted that he will die from such affliction within a very short time, yet if, by some accidental means, his death is caused sooner, it will be a death from 'accident' within the meaning of the terms of an accident insurance policy." *Hooper* v. *Standard Life and Accident Insurance Co.*, 116 Mo. App. 209, 148 S. W. 116.

The appellant conceded that the death of the insured was proximately caused by a ruptured blood vessel but denied that the death was the result of an accident. The court of appeals, however, said that the evidence was uncontroverted that the rupture was an unexpected result of an attempt to crank the automobile and was, therefore, an accident within the meaning of the policy, without respect to whether the insured was suffering from hardened arteries, as suggested in the evidence, or not.

Workmen's Compensation: Tuberculous Meningitis Attributed to Blow on Back.—The deceased, it was claimed, fell in the course of his employment, about 7 o'clock on the morning of September 17, striking his back in the lumbosacral region and abrading the skin. He continued at work throughout the day but was absent during the next two days. Thereafter he worked off and on, with intervals of disability, until he was taken to a hospital in an unconscious condition, February 6, where he died four days later from tuberculous meningitis. The industrial commission made an award in favor of his widow, on the ground that death was due to the injuries sustained, and that award was confirmed by the circuit court of Cook county. This, however, said the supreme court of Illinois when it set the award aside, was error. It is the province of the industrial commission to draw reasonable inferences from the evidence, but an award cannot rest on conjecture or surmise or on the choice between two views equally compatible with the evidence. The claimant must show, by a preponderance of evidence, not only an accidental injury but that the loss complained of was caused by that injury. This the claimant in the present case did not do. Tuberculous meningitis does not originate of itself. It results from a primary infection or focus in some part of the body, from which tubercle bacilli enter the blood stream and are carried to the meninges. A crushing injury might cause in the injured part a lower resistance to the development of tuberculosis, provided there were tubercle bacilli in the body; the injured part would be more subject to attacks and would furnish a better field for the development of the bacilli. If the disease attacks the injured part, the germs may get into the blood stream, reach the meninges, and cause tuberculous meningitis, but on this theory it is necessary for the claimant to show the presence of tubercle bacilli at the place of injury. No evidence was offered, however, of tuberculosis at the seat of the injury, in the spine or in the lumbosacral region. The injury to the back was superficial, consisting of a bruised place where the skin was knocked off. The tuberculous meningitis from which the deceased died must have originated from tubercle bacilli in some part of the body, but the evidence did not show that they came or could have come from the bruised back.—*Sears, Roebuck & Co. v. Industrial Commission et al. (Ill.), 165 N. E. 689.*

Medical Inspection of Schools: An "Osteopathic Physician" Not a "Physician."—The school law of New Jersey provides that "every board of education shall employ a competent physician to be known as the medical inspector." The petitioner was not licensed under the medicine and surgery act but was licensed as an osteopath. Part of the argument in the case rested on the fact that the osteopathy act speaks of "osteopathic physicians." To my mind, said Justice Parker, the legislature meant that the medical inspector should be a physician as the word is ordinarily understood, in short, an M.D. This is indicated by the phraseology "medical inspector" and "shall examine every pupil to learn whether any physical defect exists." The limitations of the practice of osteopathy by the osteopathy act are such that, even if it be conceded that a licensed osteopath has sufficient medical knowledge to perform satisfactorily the duties of a "medical" inspector, still the word "physician" and its context lead the mind back inevitably to the conclusion that the legislature required a general practitioner, or at least some one licensed as such. The School Law was in force when the osteopathy act of 1913 was passed. Before that time the act plainly meant a licensed M.D., and that meaning it would naturally retain until the legislature showed more plainly than it appears to have done an intent to modify it. The petition for a writ of certiorari to review a discharge of the petitioner from employment as medical inspector for the school district of Hasbrouck Heights was dismissed.—*Chastney v. State Board of Education et al. (N. J.), 145 Atl. 730.*

Evidence: Testimony of Layman as to Disease.—The appellant contended that the testimony of nonexpert witnesses as to the physical appearance of the deceased had no probative value and should have been excluded. The court of appeals of Kentucky, however, quoted with approval from *Sovereign Camp, Woodmen of the World* v. *Morris*, 212 Ky. 201, 278 S. W. 554: "If within his knowledge, a layman may testify as to the strength, vigor and apparent physical condition of another person, and as to the presence or absence in such person of symptoms indicating disease; also some forms of disease are so common and so well understood as to be within the knowledge of a layman, but he cannot diagnose diseases or testify as an expert in reference thereto."—*Grand Lodge, Brotherhood of Railroad Trainmen v. Johnson (Ky.), 15 S. W. (2d) 499.*

Workmen's Compensation: Liability When Disease Supervenes on Accidental Injury.—In compensation cases, when the accidental injury results in continuous disability, the law does not attempt to distinguish between the disability caused by the injury and disability which may be more particularly attributed to disease. A distinction may be drawn between cases based on disability alone and cases based on death, but such a distinction should not be drawn unless the evidence establishes that the disease that manifested itself after the accident could not have been aroused by the accident or contributed to by it.—*Henderson v. Louisiana Power Co. (La.), 121 So. 217.*

Abortion, Criminal: Evidence.—It is error to permit a medical witness who had attended the deceased, on a trial for murder by criminal abortion, to testify, over objection on behalf of the defendant, as to the day on which the abortion was committed, where the witness bases his testimony solely on a statement of the deceased. Under the laws of Illinois, to cause an abortion and to attempt to cause an abortion are separate and distinct offenses. Where the defendant is charged with murder by abortion, it is error to instruct the jury with respect also to murder by an attempt to commit an abortion.—*People v. Hagenow (Ill.), 166 N. E. 65.*

Society Proceedings

COMING MEETINGS

American College of Physicians, Minneapolis, February 10-17. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.
American Heart Association, New York, February 3. Dr. I. C. Riggin, 370 Seventh Avenue, New York, Executive Secretary.
American Orthopsychiatric Association, New York, February 21-22. Dr. George S. Stevenson, 370 Seventh Avenue, New York, Secretary.
Pacific Coast Surgical Association, Del Monte, Calif., February 7-8. Dr. E. L. Gilcreest, 384 Post Street, San Francisco, Secretary.

SOUTHERN SURGICAL ASSOCIATION

Forty-Second Annual Session, held at Atlanta, Ga., Dec. 10-12, 1929

The President, DR. LUCIUS E. BURCH, Nashville, Tenn., in the Chair

Subphrenic Abscess

DR. LON GROVE, Atlanta, Ga.: My paper is based on two cases of subphrenic abscess. The principal cause of subphrenic abscess is some suppurative abdominal condition demanding operation. The incidence of subphrenic abscess can probably be reduced by more thorough drainage and more careful supervision of postoperative posture, as gravity plays the major rôle in the various modes of infection. The history of a previous peritoneal infection in the presence of sepsis of unknown origin should immediately arouse a suspicion of a subphrenic abscess. Aside from the history of a primary lesion, the evidence gained from roentgen and fluoroscopic study is probably the most reliable diagnostic aid. The indiscriminate use of exploratory puncture is to be condemned. Prognosis is in direct proportion to the duration of the disease; hence, every effort should be made to arrive at an early diagnosis.

Diaphragmatic Hernia

DR. R. L. SANDERS, Memphis, Tenn.: Diaphragmatic hernia is likely to be a more frequent condition than we have previously considered it. Many cases are probably never diagnosed because they are not producing symptoms sufficient to urge the patient to have a complete examination including a roentgenologic study of the gastro-intestinal tract. The combined abdominal and thoracic approach probably expedites the operation and makes it easier and safer for the patient. I found only a few cases recorded in the literature in which a previous empyema was the probable cause of a weakened diaphragm eventuating in a hernia.

Simplified Treatment of Thoracic Empyema

DR. ALBERT O. SINGLETON, Galveston, Texas: The basis for this paper was a study of a series of eighty-one consecutive cases of nontuberculous empyema. Practically all these cases followed pneumonia or influenza. The mortality was low. This was probably due to the milder pneumonia or possibly to the method of treatment. For a number of years I have practiced a modified closed method of drainage. There are two sizes of tube, one for children and one for adults. The trocar and cannula are inserted between the ribs and the cannula remains in place stitched to the skin. Tube connection filled with sterile water is led to a large bottle beside the bed and the end placed under water, thus maintaining a vacuum, with a siphon effect. The pus is allowed to escape gradually for the first twenty-four hours by clamping and unclamping the tube. The vacuum is maintained for from eight to ten days, when leaking of air around the cannula occurs. At this time the cannula is removed and a rubber tube of the same size as the cannula is substituted. This drain cannot slip into the chest and it does not protrude so that the dressing presses on its end. The tubes should not be left out until the cavity is practically obliterated, which can be told by measuring its capacity with water, or by iodized oil and roentgen examination. Local anesthesia is always used, even with infants. The intercostal nerves in the space drained and one rib space above and below are blocked with procaine hydrochloride proximal to the wound. Also from 1 to 2 cc. of alcohol is used to block the intercostal nerve of the space drained, so that the pain from the pressure of the cannula will not give trouble for several weeks. The position selected for drainage is one rib space below the angle of the scapula and directly below. It is important to have the arm at the side when the operation is done. If the incision is made with the arm above the head, the opening in the skin and that of the chest wall will not correspond when the arm is brought to the side. I am not in a position to say that this method of drainage gives better results in every instance than the open rib resection. Undoubtedly rib resection has a place in certain cases, but I have been better satisfied since adopting this method as a routine.

Empyema in Children

DR. T. M. MASON, Birmingham, Ala.: All available diagnostic methods should be employed for the detection of fluid in the pleural cavity, for this, in young children, is often difficult. The roentgen ray is of the greatest service. In very young children the indications for treatment are not so clear; hence, in patients under 1 or 2 years of age, we are perhaps justified in persisting for a longer time in aspiration, since the mortality from more extensive operation has been so excessive and since reports presented in the last few months indicate the value of operations alone in patients of this age. We should depend on therapeutic aspiration for the relief of pressure symptoms until the fluid has become definitely purulent and thick and then resort to rib resection or intercostal incision with tube drainage. Of thirty-four cases in a series of forty which terminated in complete cure, none reached the chronic stage, and there were no recurrences.

Phrenic Exeresis in the Treatment of Tuberculosis

DR. L. WALLACE FRANK, Louisville, Ky.: Phrenicectomy is a valuable aid in the treatment of pulmonary tuberculosis in selected cases. Of 100 patients so treated, 90 per cent being in a far advanced stage, 40 per cent showed improvement; in eight the sputum became negative for tubercle bacilli, and in eight the cavities disappeared. Phrenicectomy is an adjuvant in artificial pneumothorax, and should be considered in every case showing cavitation; following avulsion, 44 per cent of my cases showed a better collapse. Phrenicectomy is not a substitute for pneumothorax, but when done as a preliminary procedure, in a small percentage, it will render collapse therapy unnecessary. A good phrenicectomy is better than a poor pneumothorax; it is less hazardous, less discomforting, unattended with complications, and a necessary preliminary to thoracoplasty. The good results of phrenicectomy are not dependent on the location of the pathologic condition but rather on the retractibility of the pulmonary tissue. Basal and midlobe lesions offer most, and cavities above the clavicle least hope, although good results obtain in the latter with a marked elevation of the diaphragm.

Endometriosis

DR. W. F. SHALLENBERGER, Atlanta, Ga.: In a series of 560 patients, on whom a pelvic operation had been done, endometriosis was encountered in thirty-two, or 5.7 per cent. In doing pelvic surgery it is of the utmost importance to keep this condition in mind and to examine the ovaries carefully for these growths. In nineteen cases a provisional diagnosis of endometriosis was made and in the others the condition was found at operation. The ease with which such lesions may be overlooked is illustrated by a recent case in which operation was done to correct a retroversion and descensus of the uterus and a small chocolate cyst was found in the right ovary on routine inspection. It was only about 5 mm. in diameter and was unruptured, and there were no adhesions. It might easily have been overlooked. In about 200 pelvic operations on colored women I do not recall a single endometrical cyst or tumor. It would appear that these endometrioid growths are of rare occurrence in the colored race. This condition is a common cause of pelvic pathologic lesions in women. I should like to offer as a more appropriate term for such lesions the name endometrioidosis.

Electrosurgery in Gynecology

DR. HOWARD A. KELLY, Baltimore: In general surgery, the field for the new agent electrosurgery is a wide and most beneficent one, adding enormously, in some of his most difficult fields, to the efficiency of the surgeon and his delight in his work. In gynecology, it is an indispensable agent for the fol-

lowing reasons: 1. It is far cleaner than are previous methods and sterilizes as it proceeds. 2. It is a working-at-a-distance knife and fork procedure, as it avoids all handling of the structures. 3. It checks the hemorrhage of the smaller vessels and gives a better continuously visible field. 4. An active hemorrhage can usually be checked at once by catching the vessel delicately and turning on the current, which seals it effectively. 5. Ligatures are largely avoidable, in this way saving much time. 6. Nice work can often be done at a distance, say, deep in the pelvis, as easily as near the surface. 7. *Pari passu* as the operation proceeds the lymphatics are sealed. 8. It is invaluable in destroying any lingering infected area or disseminated malignant growth which cannot be dissected out. 9. As a method of doing a refined dissection, it is admirable. 10. If we had always been accustomed to depending on electrical surgery and some iconoclast were to invent the scalpel, ligatures and sutures with their oft-accompanying manipulations of the tissues, we would at once reject these novelties as being markedly inferior in every way, enhancing the risks both of mortality and of morbidity to the patient. Where usable, this method is as much ahead of scalpel surgery as our powerful modern electric engines are ahead of Richard Trevithick's and George Stephenson's locomotives.

The Surgeon in the Making

DR. LUCIUS E. BURCH, Nashville, Tenn.: This article will appear in full in THE JOURNAL.

Management of Vesicovaginal Fistulas

DR. C. JEFF MILLER, New Orleans: The principles of the cure of vesicovaginal fistula are established but they are not being practiced as a routine. The operation, while superficially simple, actually may be extremely difficult, because of limited access, infection, free bleeding and abundance of scar tissue, and it is therefore never a procedure for a tyro to undertake. The principles on which success is based include visibility and accessibility, separate suture of the structures, selection of the proper suture material, and careful preoperative and postoperative treatment. The principal operative procedures include the denudation method, the flap-splitting and bladder-mobilization method, the combined laparotomy and vaginal method, and the substitution or interposition method. Of these the flap-splitting method is most generally applicable and most uniformly successful. Colpocleisis has no place in modern surgery. In those cases in which the destruction of the bladder and urethra is too extreme to permit use of the standard methods, transplantation of the ureters into the sigmoid by the method of Coffey is a justifiable procedure in spite of its irreducible minimum of risk.

Chemical Hysterectomy

DR. CHARLES H. MAYO, Rochester, Minn.: The zinc chloride method of chemical hysterectomy which we use offers nothing new in procedure. Zinc chloride in acting on uterine tissues is destructive, but passing through the fallopian tube and dropping into the peritoneal cavity it may form zinc albuminate. This is intensely toxic, and might react on the heart or on the circulation. It is not a method that would be used in women who have a large or even medium sized fibroid uterus; nor should it be considered in a case of fibroid uterus that is irregular in form, for surface fibroids are not destroyed or removed by this procedure, nor in a uterus that is more than half larger than normal. A patient who needs hysterectomy in all probability should undergo a general abdominal and pelvic examination. The method is indicated, however, in many women whose uterus, or the cervical portion of it, acts as a focus of infection, and in whom the condition is complicated by disease of the kidneys or heart. The greater number of patients are between the ages of 42 and 60. A woman who is willing to cooperate may have this chemical application made without taking a general anesthetic; most women, however, do better under general anesthesia. Iso-amyl-ethyl barbiturate by mouth may suffice. (The author described the technic of using zinc chloride in detail.)

Abdominal Panhysterectomy Simplified

DR. EDWARD H. RICHARDSON, Baltimore.: Particular attention is directed to the accurate anatomic basis and the sound surgical principles on which this operation is based. An analysis of the various steps will show that it was specifically designed (1) to avoid the troublesome and often serious hemorrhage common to the older procedures; (2) to obviate the danger of injury to the ureters; (3) to minimize to the utmost the possibility of infection, especially peritonitis, emanating from a focus in the cervix; (4) to prevent the occurrence of late postoperative prolapse of the vagina, and (5) to eliminate the incidence of surgical shock attributable to loss of blood and prolonged operative manipulations. I have performed this operation fifty times. In this series is to be found nearly every type of both simple and complicated pathologic condition requiring surgical therapy of this kind. In addition many of the individuals were poor surgical risks. With each successive experience I have been increasingly impressed with the simplicity of the technic and the relative ease of its execution. There have been no deaths in the series. One woman developed a late postoperative intestinal obstruction from which she recovered after the performance of enterostomy. This misfortune, of course, cannot justly be charged against the operative technic used, since it commonly follows laparotomy performed for any one of a great variety of purposes. There have been no other serious complications of any kind whatever, and it has been particularly gratifying that not a single instance of surgical shock occurred.

Purpura Hemorrhagica in Pregnancy

DR. H. R. SHANDS, Jackson, Miss.: I wish to report a case of acute purpura hemorrhagica occurring in a woman six and one-half months pregnant, with recovery. On admission the patient had a temperature of 104 F.; a pulse rate of 120; and a systolic blood pressure of 80, with extensive subcutaneous hemorrhagic spots and bleeding from the mouth, stomach and vagina. The urine was apparently pure blood. The blood platelet count was 10,000 and the leukocyte count 1,100, with a marked secondary anemia. In a ten day preparation for splenectomy she was given 4,000 cc. of blood by the citrate method, four roentgen treatments over the spleen and five doses of calcium chloride intravenously. The fever and hemorrhagic manifestations promptly subsided, so that a splenectomy was easily and safely done in ten days after admission. The uterus was emptied by cesarean section at the time of the splenectomy. Five months later the patient was entirely well with a normal blood picture.

Partial Cholecystectomy

DR. W. L. ESTES, JR., Bethlehem, Pa.: Partial cholecystectomy in properly selected cases seems a safe procedure. Its chief indication is in acute cholecystitis when a cholecystectomy is indicated and is technically impossible or unsafe, particularly in cases of stone impacted in the cystic duct. It should never be used when cholecystectomy can be performed safely.

Prevention of Gallbladder Disease

DR. HUBERT A. ROYSTER, Raleigh, N. C.: Encouragement of exercises to bring about increased respiratory effort and the exhibition of magnesium sulphate (just as effective by mouth as by tube) will tend to diminish biliary stasis. Control of the diet may be depended on to reduce the amount of cholesterol in the system, such articles as egg yolk, cream, brains and animal fats being omitted. Removal of focal infections and maintenance of the "antiseptic acid barrier of the stomach" to guard against organisms reaching the friendly alkaline duodenal medium will care for possible infection. Brown proved experimentally that cholecystitis did not occur unless actual inflammatory lesions were present in the liver; hence, cholecystitis is frequently found as a sequel to or associated with the remote inflammatory lesions of the portal system, appendicitis, typhoid and peptic ulcer. A careful roentgen examination of the gastro-intestinal tract is done; also investigation of the gallbladder by cholecystography. Following this, if the results are negative, he proceeds to obtain the A, B and C bile by the Lyon-Meltzer method for microscopic examination, which shows the earliest precipitation of cholesterol in its characteristic crystal form, thus affording early evidence of hepatic cell involvement beyond the smallest biliary capillaries—a point to stress, because it is the discovery of this early involvement that gives a real chance to prevent the formation of gallstones.

Chemical or Cautery Cholecystectomy

DR. W. D. GATCH, Indianapolis: Destruction of the mucous membrane of the gallbladder by means of cauterization is especially advised for the treatment of the gangrenous gallbladder. The technic consists in emptying the gallbladder of its contents, splitting it from fundus to ampulla, extracting stones lodged in the cystic duct or ampulla, destroying the mucous membrane, and infolding the remaining coats of the gallbladder about a rubber tube introduced into the cystic ducts. Redundant parts of the gallbladder may be trimmed away. It is the operation of choice in the management of nongangrenous gallbladders when ordinary cholecystectomy, for any reason, is dangerous. In a series of sixty cases so treated there was only one death. Fifteen of these patients had gangrene of the gallbladder. The convalescence of these patients was smooth and the postoperative complications were few.

Fractures of the Acetabulum

DRS. WILLIAM R. CUBBINS, ARTHUR HOBART CONLEY and J. J. CALLAHAN, Chicago: In addition to separating fractures into fractures of the rim and fractures with dislocation, we subdivide fractures of the acetabulum into fractures of the ischial portion, fractures of the pubic portion, fractures of the ischial and pubic portions, fractures of the ilial portion, and fractures involving all three bones entering into the acetabular formation. These divisions are made because we feel that traction should be made in different lines in order to meet the requirements of the various dislocations, and that slightly different motions are necessary to accomplish a reduction. We also present a new method of making lateral traction in these injuries by means of an incision in the outer surface of the thigh, slightly beneath the trochanter major, and the insertion of a 4 inch wood screw through the cancellous bone in the line of the femoral neck. To the head of this screw copper wire is attached and then weight can be added sufficient to pull the fractures into position. This is aided by a Buck's extension and 20 pounds of weight in longitudinal traction.

Acute Primary Ileocolic Intussusception in the Adult

DR. F. G. DUBOSE, Selma, Ala.: The intussusception in my case consisted of 14 inches of the terminal ileum, with a portion of the cecum, including the base of the appendix; the intestine was dark with many thrombotic areas. The terminal ileum and cecum were almost black. No gross pathologic change was observed in the examination of the reduced intestine. An enlarged Peyer's gland was found in the ileum at least 1 inch above the invaginated portion. The application of hot gauze pads for fifteen minutes was not followed by sufficient restoration of circulation to justify leaving the intestine within the abdomen, as evidently portions of it would become gangrenous and slough. A resection was done, including all the darkened portion of the bowel, which consisted of the cecum and 16 inches of the terminal ileum, including the appendix. A lateral anastomosis was made between the ileum and ascending colon 2½ inches above the point of resection of the cecum. As a measure of additional safety, an enterostomy was done after the Mayo-Long method in the ileum, about 10 inches from the point of anastomosis; the abdomen was closed without drainage. The general condition continued satisfactory, except that the skin was cold and clammy, with rather free perspiration, till the evening of the third day, when a sudden severe pain occurred in the abdomen and hiccup became persistent. The morning of the fourth day, the patient complained of a sense of fulness, the upper part of the abdomen being markedly distended. When a stomach tube was introduced, 2 quarts of coffee colored fluid was withdrawn; two hours later the patient vomited a quantity of dark liquid. A second and higher (jejunal) enterostomy was done. Immediately there was an abatement of symptoms with free drainage of intestinal contents through the enterostomy opening. The enterostomy opening was closed after draining two weeks. Recovery was very slow but gratifying.

Radical Treatment of Cancer of the Bladder

DR. ROBERT C. COFFEY, Portland, Ore.: Radical treatment of cancer of the bladder may be carried out in the form of destructive doses of radium, destructive application of the cautery or diathermy, radical surgical removal of the bladder or a combination of two or more of these agents. Radical treatment of cancer of the bladder is not feasible without a relatively safe method of transplanting the ureters into the large intestine. That this end has been reached is shown by a report of twenty cases of bilateral transplantation of the ureters by the tube technic with one death and no clinical symptoms to indicate that the patient's kidneys were injured by the operation. In the twenty cases reported, eight of the transplantations were performed for cancer of the bladder, with no operative mortality. Palliative operations were done in four. In four advanced cases in which metastasis had occurred, no hope of cure could be offered. These patients all died of cancer metastasis with the kidneys seemingly performing their function to the end. In four cases radical treatment was instituted. In three of these, the cancer was far advanced. Large doses of radium were used in all cases, after the ureters had been transplanted. In one case, the bladder was apparently completely destroyed with the growth by nearly 10,000 mg. hours of radium. In two cases in which large doses of radium had been used, the bladder was later removed and no evidence of cancer was found, indicating the possibility of curing cancer of the bladder with destructive doses of radium alone. In the fourth case, the cancer was much farther advanced and even extended beyond the bladder wall. In this case a large destructive dose of radium had been used and the bladder, after being mobilized from its surrounding attachment, was destroyed by actual cautery. There were no deaths in this series.

Case of Cystic Lymphangioma Requiring Resection of Forty Inches of the Jejunum

DR. CHARLES W. FLYNN, Dallas, Texas: A positive diagnosis of mesenteric cyst was not made in this case. The tumor was an unusually large one. It was firm, but contained many small cysts lined with endothelium and containing turbid fluid. Some of these cysts were collapsed. The tumor was a lymphangioma, cystic in type, but apparently firmer than most authors have hitherto described. Repeated attacks of cramp colic and marked constipation heralded an oncoming intestinal obstruction. No glands were enlarged in the mesentery. This tumor developed from the first portion of the mesentery of the jejunum. Resection of a large section of the jejunum together with the tumor was carried out with success. The patient enjoys perfect health thirteen months after operation.

Recent Fractures of the Hip

DR. EDWARD H. OCHSNER, Chicago, and DR. J. KENNETH SULLIVAN, Cleveland: The three really worth-while methods of treatment that have so far been devised are the Whitman, the Hodgen and the Maxwell-Ruth. Of the three the Maxwell-Ruth method is decidedly the best. It results in stable union and a good useful member, because it reestablishes the normal internal structure of the femur in the largest percentage of cases in the shortest period of time. Fifty-seven patients have been treated by this method. Nonunion occurred in one; three showed improvement; five died, and forty-eight were cured. Ten patients were under 50 years while forty-five were over 50, and of this number twenty-one were over 70 years. All who died were 70 years old or over.

Cyst of the Cecum

DR. EARLE DRENNEN, Birmingham, Ala.: Three new cases of cyst of the cecum are reported. A child, aged 9 months, was admitted to the hospital with symptoms of acute intestinal obstruction. Physical examination showed a tumor somewhat larger than a hen's egg in the region of the cecum. It could be moved slightly from side to side and was not very tender. At operation a tumor connected with the mesial wall of the cecum was found. It was about 3 inches long and 1 inch by 1½ inches in cross section. As the lumen of the cecum was greatly encroached on, I decided to resect, and about 6 inches of the terminal ileum, together with the cecum and appendix, and 2 inches of the ascending colon were removed. A side-to-side anastomosis was done. The patient was living and well two and a half years later. The microscopic diagnosis was developmental anomaly of the cecum. In a second case there was a history of six days of vomiting and bloody stools. A

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mass could be felt by rectal examination and a tumor was palpable in the sigmoid region. At operation a large intussusception was found. It was impossible to reduce the intussusception as the ileum had sloughed in two places. Resection of all of the colon with its contained intussusception, leaving only the sigmoid, was done. The ileum was joined to the sigmoid by lateral anastomosis. The patient died one hour later. The cecum showed a small cyst on its posterior wall just above its ileocecal valve. In the third case a cyst was found occupying the lower end of the cecum; the appendix opened into the cyst. The caput cecum was excised and the defect in the intestine was repaired by suturing the cut edges together. The patient made an uneventful recovery.

Experiences with Venoclysis

DR. G. A. HENDON, Louisville, Ky.: My experience has demonstrated that venoclysis renders one entirely independent of the gastro-intestinal system so far as nutrition and liquidation are concerned. When the ease, safety and simplicity of the procedure are more generally and more thoroughly appreciated, venoclysis will become the method of medication in most of the serious and acute diseases. For my own convenience I have devised a cannula made of silver and plated with gold, to prevent corrosion. The point is rounded and blunt and there are openings in the sides with none at the end. This, I believe, renders it less liable to become clogged by a clot of blood or loose tissue. In my experience with more than a hundred cases I have never had an accident or grave complication that could be ascribed to or connected with the method of treatment. Venoclysis has been more useful in the treatment of general peritonitis and adynamic ileus than any other one remedy, allaying thirst, supplying nutrition, slowing and strengthening the heart action, quieting delirium, maintaining the action of the kidneys and reducing to a marked degree the distressing emesis that characterizes this malady.

A Useful Semianesthesia from Phenobarbital

DR. WILLARD BARTLETT, St. Louis: A surgical anesthesia produced by phenobarbital and nitrous oxide (sometimes ethylene) has certain definite advantages: There are no harmful preoperative anticipations; the patient is not cognizant of transportation to the operating room; the sights, odors and sounds which characterize this room fail to register; her condition closely resembles sound normal sleep; still she will sometimes ask a question and will usually answer one; the situation seems ideal from the standpoint of patient and operator alike; the needle prick for local anesthesia is immediately forgotten, while there is little if any sense of suffocation accompanying the first inhalation of a general anesthetic. During the operation a surprisingly small quantity and concentration of gas has been required for complete satisfaction; consequently cyanosis and bleeding are diminished, while hemostasis assumes a new and unawaited facility. After operation one sees practically no sweating and comparatively rarely any nausea. The postoperative administration of fluids by mouth has in consequence largely supplanted the hypodermic and intravenous methods. There is, too, a welcome postoperative oblivion of many hours' duration (fifty-six hours in one instance). It is unusual for the patient to recall any incident of the day of operation. An economic phase of the subject becomes apparent when one reflects that a patient who is not excitable, vomiting, suffering or disturbing the neighbors makes a minimum requirement of the nursing personnel. Phenobarbital is given in doses of from 12 to 30 grains (0.8 to 2 Gm.) three hours before operation; if none is vomited, as occasionally happens, no "supplementary" is needed, as a rule. This dose has not harmed any adult, if one excepts a few transient skin rashes, while 30 grains controlled perfectly the wildest toxic thyroid patient imaginable who had entered the hospital only ten days before operation, with a basal metabolic rate of plus 122.

Rational Treatment for Cancer of the Lower Lip

DR. ELLIS FISCHEL, St. Louis: A V shaped excision of primary growths up to 1.5 cm. in diameter and the use of radium in growths larger than this is the method of choice in cancer of the lip. The lymph glands of the lower parotid, both submaxillary glands, the submental gland and both the glands of the lower facial regions are removed as a routine in a block dissection of these regions which includes all tissues from the undersurface of the skin to the surface of the muscles. Roentgen irradiation as a curative agent for metastases to the cervical lymph nodes is without value. The grading of carcinoma is considered unimportant in reference to therapy. The responsibility for the treatment of cancer of the lower lip belongs entirely to the surgeon.

Peritoneal Drainage Following Appendectomy When Appendix Is Ruptured

DR. E. DUNBAR NEWELL, Chattanooga, Tenn.: In twenty-three of a series of fifty-six cases, the peritoneal cavity was closed snugly and completely without any peritoneal drainage. In a few cases a suprafascial drain of rubber tissue was placed. In every instance in which the peritoneal cavity was closed without drainage, just as soon as the peritoneum was closed all linen around the incision was removed; fresh instruments were brought in; the incision was cleansed with ether; the skin was wiped dry and iodine applied; gloves were either changed or carefully washed in mercuric chloride solution, and the patient was redraped. There were no deaths. In thirty-three of the cases I drained the peritoneal cavity at the time of operation. There were eight deaths. In eight of these cases the appendix was not removed. It seems to me that patients with peritoneal drainage have a longer convalescence with a much longer stay in the hospital than patients without peritoneal drainage. The complications were more severe and more frequent in cases in which there had been peritoneal drainage than in cases without peritoneal drainage.

Orbital Tumors

Dr. ISIDORE COHN, New Orleans: 1. Squamous cell carcinomas of the eyelid may appear in any portion of the lids. 2. They are slow growing tumors. 3. They recur frequently, metastasize slowly and eventually invade the orbit. 4. After surgical excision, plastic surgery may save the eye for several years. 5. Eventual exenteration is, as a rule, necessary because of recurrences. 6. Whether radium, x-rays or endothermy is better than surgery, alone or in combination, is hard to determine because the more radical the surgery, the better will be the end-results. 7. Disturbance of vision is the exception, resulting in our experience only after there had been an exposure of the cornea. 8. Surgery alone, or surgery combined with endothermy, high voltage roentgen therapy and radium has not resulted in a permanent cure in a single case in my hands. Early treatment should give better results.

Influence of the Thyroid, Suprarenals and Nervous System on Production and Treatment of Peptic Ulcer

DR. G. W. CRILE, Cleveland: Clinical and experimental evidence indicates that hyperacidity and hypermotility are controlled by the nervous system and the thyroid and suprarenal glands, which exhibit a reciprocal relation. The thyroid gland controls the permeability of every cell of the organism. The suprarenal glands are an integral part of the nervous system, especially of the sympathetic system, which in turn is the greatest activator of the thyroid gland. It is logical to expect, then, that gastric ulcer could be controlled by excision of sufficient thyroid or suprarenal tissue to reduce the drive of the sympathetic nervous system. A reciprocal, independent group of organs forming a working system apparently is best modified by removing a part of each. Accordingly, partial thyroidectomy and suprarenalectomy were performed in five cases of intractable or recurrent ulcer of the stomach, followed in every case by a decrease in gastric and intestinal motility and disappearance of the symptoms of ulcer.

Operative Measures in the Treatment of Pain in the Lower Part of the Back

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: Infection is the chief etiologic factor causing symptoms referred to the lumbosacral and sacro-iliac regions. Trauma is often the instigating factor, but unless very severe and of a most definite nature is of secondary importance. Even when severe trauma is the causative agent, the possibility of an associated infection from some distant focus must be considered. This is of especial importance in those past 35 years of age. In infections, months

or years may elapse before there is any change in the continuity or structure of the bones; consequently, the diagnosis must frequently be made before such changes occur, if relief is to be secured. After trauma, gross fractures of the sacrum, pelvis and lower spine may be apparent. Forward displacement of the fifth lumbar vertebra on the sacrum, spondylolisthesis, may be demonstrable, but this may also be due to trophic changes or infection. The indications for operative treatment are as follows: (1) in those in whom a definite pathologic process is demonstrable by the roentgenogram, as tuberculosis or fractures, and (2) in those in whom severe symptoms have persisted over a period of years in spite of the best conservative measures, even though the roentgenogram of the regions has been persistently negative.

Esophageal Diverticulum

DR. F. H. LAHEY, Boston, gave a brief history of the development of the knowledge and differentiation of types of esophageal diverticulum, with a short discussion of the mechanism by which esophageal pulsion diverticulum develops, and the symptomatology of the condition. The results in twenty-one operative cases in which there was no mortality, particularly from the point of view of mistakes in the management at the time of operation causing postoperative difficulties, were presented, together with the procedures which had been developed to overcome them. Twenty-one illustrations of the types of diverticulum, the plan of procedure in the two-stage operation, the difficulties and complications which arise, and the methods of overcoming them, were shown.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Obstet. & Gynecology, St. Louis

18: 757-914 (Dec.) 1929

*Hepatic Lesion in Eclampsia. W. J. Dieckmann, St. Louis.—p. 757.
Hydatidiform Mole: Case. E. A. Schumann, Philadelphia.—p. 768.
*Analysis of Eighty-Four Consecutive Cesarean Sections. J. C. Hirst, Philadelphia.—p. 773.
Ovarian Pregnancy: Case. A. Strauss, Cleveland.—p. 781.
*Care of Lactating Breast. F. B. Smith, Houston, Texas.—p. 784.
Secondary Adenocarcinoma of Ovaries from Jejunum. M. A. Roblee, St. Louis.—p. 790.
*Primary Carcinoma of Vagina Following Baldwin Reconstruction Operation for Congenital Absence of Vagina. R. N. Ritchie, Rochester, N. Y.—p. 794.
Sex of Children After Single Oophorectomy. J. R. Harger, Chicago.—p. 799.
*Liver Function Tests in Normal Pregnancy. R. C. Cross, New Orleans.—p. 800.
*Blood Test for Ovarian Hormone. J. C. Janney, Boston.—p. 807.
Puerperal Inversion of Uterus: Classification for Treatment. F. S. Kellogg, Boston.—p. 815.
Premature Separation of Normally Implanted Placenta: Sixty-One Cases. R. A. Bartholomew, Atlanta, Ga.—p. 818.
Occurrence of Fusiform Bacilli and Spirochetes Associated with Foreign Body in Vagina. I. Pilot, Chicago.—p. 824.
Prolapsed Fibroid with Partial Inversion of Uterus Complicating Puerperium: Case. W. F. Gemmill, York, Pa.—p. 827.
*Endometrial Cysts of Ovary: Case Cured by Aspiration and Roentgen Treatment. C. Mazer and J. Hoffman, Philadelphia.—p. 829.
*Simple Round Ulcers of Vagina. C. F. Fluhmann, San Francisco.—p. 832.
*Incidence of Undulant Fever in Pregnancy and Abortion. E. L. Cornell and C. R. DeYoung, Chicago.—p. 840.
*Pregnancy Complicated by Amyotrophic Lateral Sclerosis. A. J. Murphy, New York.—p. 845.
Krukenberg's Tumor: Case. M. W. Searight, Memphis, Tenn.—p. 847.
*Comparison of Results Obtained in Induction of Labor by Means of Bougie or Bag. D. G. Morton, Baltimore.—p. 849.
Complete Atresia of Cervical Canal During Pregnancy as Complication of Cervical Hypertrophy: Case. H. Acosta-Sison and V. Poblete, Manila, P. I.—p. 860.
Seasonal Variation in Weight Loss of New-Born. H. Bakwin and R. M. Bakwin, New York.—p. 863.
Vaginal Examination in Third Stage of Labor as Guide to Management. M. Leff, New York.—p. 868.
*Quinine Reaction Following Rectal Analgesia. G. W. Gustafson, Indianapolis.—p. 877.

Hepatic Lesion in Eclampsia. — Dieckmann presents further evidence that an hepatic lesion in eclampsia may result from a greater concentration of substances in the portal vein which can bring about thrombosis and which obviously must have their origin in great part from the intestinal tract. This work further emphasizes the value of limiting the meat protein intake and the insistence on good intestinal hygiene in the patients in the last months of pregnancy, thereby averting at least the fulminating types of eclampsia.

Analysis of Eighty-Four Consecutive Cesarean Sections.—Hirst analyzes a series of eighty-four cesarean sections from a total of 3,979 deliveries, or 2.1 per cent. Various operations were performed: high and low classic; Kerr and Beck cervical; marsupialization, and the Porro. Previous sections have been performed in twenty-nine cases. The maternal mortality was seven (8.33 per cent). In the elective group it was 4.76 per cent. The fetal mortality was 20 per cent.

Care of Lactating Breast.—In Smith's opinion the care of the breast during pregnancy needs little consideration, for a normal breast needs no treatment. Nature herself is preparing the gland for its future task; and, unless some definite indication for intervention arises, the process should be left strictly alone. Proprietary lotions and oils sold to the mother are worse than useless. No beneficial results come from wearing tight brassières or from massaging. Indeed, the latter is often harmful, as it results in a hyperplasia of the fibrous supporting structures of the breast at the expense of the secreting portions. Nipples, which early in pregnancy seem depressed, usually become protuberant during the later months. The nipple which is frankly inverted yields to manipulation so rarely, and the manipulation is accompanied by such danger of injury and infection, that the attempt is not justifiable. The mother with such nipples should be advised to forego placing her baby to the breast from birth, as it is seldom that an infant can obtain the milk satisfactorily from an inverted nipple, and practically an impossibility to prevent breast complications if it persists in the effort. Fissures and abrasions of the nipple occurring during pregnancy require the same treatment as those occurring post partum. Ordinarily the passive breast of pregnancy remains in its state of simple generalized hyperplasia for several days following parturition. Then, in a few hours, it becomes one of the most active organs of the body. Its venous and lymphatic stasis, its tumefaction and hyperemia, the acute dilatation of its tubules and acini, and the hypertrophy of its lobules, all invite bacterial invasion. It is at this time that the obstetrician must be most observant and prophylaxis most scrupulously practiced.

Primary Carcinoma of Vagina Following Baldwin Reconstruction Operation for Congenital Absence of Vagina.—Ritchie's patient was 26 years of age. At 13, because of absence of the vagina, one was constructed from a segment of the colon just above the cecum. Following the operation the patient's menstrual function was normal, with no dysmenorrhea. Six years later the patient married and her sexual history was normal, although she never became pregnant. When Ritchie first saw the woman, pelvic examination showed the vulva to be nulliparous and healthy. The urethra, Skene's tubules and the Bartholin glands were normal. No abnormal anatomic changes were noted about the vulva. The vagina was normal in size. About 2 cm. inside the fourchette was a mass the size of a large walnut, arising from the posterior wall of the vagina, obliterating the lumen of the vagina to such an extent that it was difficult to admit an index finger above the mass without causing great pain and discomfort to the patient. For this reason it was impossible to examine the cervix, uterus or appendages with any degree of accuracy. The mass proved to be malignant.

Liver Function Tests in Normal Pregnancy.—Cross concludes from his study that the bromsulphalein test is probably the most helpful of all. It is invariably negative in normal

cases; but if any retention is shown, complications are to be looked for. It can be employed with impunity, for it seems to produce no ill effects on the patient, immediate or remote. The van den Bergh test is valuable only in occasional cases. The icteric index test is valuable in that positive results point to hepatic insufficiency. The Fouchet, Schlesinger, Ehrlich, levulose tolerance, and Widal hemoclastic crisis tests are not uniformly reliable. All tests, even those whose reliability has been established, should be interpreted with caution, because of the fact that no one test can demonstrate the functional ability or disability of an organ with manifold functions.

Blood Test for Ovarian Hormone.—In a series of blood tests performed post partum by Janney, the estrus-producing substance isolated by Frank and Goldberger in 1926 was found to disappear rapidly after delivery from the circulating blood of the patient. This applies to the dose of hormone contained in 40 cc. of blood. In a series of tests performed by the same method on pregnant patients, which included thirty-six cases previously reported, the proportion of positive tests increased with the duration of pregnancy until it reached 95 per cent in the tenth lunar month.

Endometrial Cysts of Ovary Cured by Aspiration and Roentgen Treatment.—Mazer and Hoffman relate the case of a woman, aged 45, who presented a large intraperitoneal cystic mass reaching three fingerbreadths above the umbilicus, and some edema of the abdominal wall and lower extremities. Vaginal examination showed the uterus only slightly enlarged and pushed to the left by the mass. After preoperative rest in bed and the administration of digitalis, the patient was prepared for operation under spinal anesthesia. Because of a few unsuccessful attempts to introduce the anesthetic, her pulse became too rapid and feeble to warrant an attempt at operation under a general anesthetic. In order to relieve the embarrassed myocardium, aspiration of the cyst as a temporary measure was deemed advisable. This yielded 5 quarts (liters) of tarry chocolate-colored fluid. Intensive roentgen treatment was prescribed in the hope of causing regressive changes in the cyst wall by withdrawing the hormonal influence of the remaining ovary and through the direct action of the rays on the cyst wall. The patient made an uneventful recovery, and four weeks later only a small, not tender mass was palpable to the right of the uterus. This mass gradually disappeared under the influence of repeated roentgen treatment so that there is at present no evidence of a pathologic condition of the adnexa.

Simple Round Ulcers of Vagina.—The literature contains reports of sixteen cases of ulcus ortundum simplex vaginae. Two additional instances are reported by Fluhmann. The lesion is a chronic nonsyphilitic inflammatory ulcer of the vagina and usually occurs after the age of 40. The etiology is not understood. The differential diagnosis consists in recognizing it from ten other ulcerative conditions that may occur in this situation. Treatment by conservative means is recommended.

Incidence of Undulant Fever in Pregnancy and Abortion.—Cornell and DeYoung tested 1,015 specimens of blood serum from pregnant women by the agglutination reaction with *Brucella abortus* and *Brucella melitensis* antigens. Of this number none gave definitely positive and only five weakly positive reactions. The indicated conclusion is that *Brucella abortus* infection is not generally prevalent in pregnant women in Chicago. Blood serums from twenty-two women who had aborted gave negative results by the agglutination test with *Brucella abortus* and *Brucella melitensis* antigens. In the twenty-third case the aborted blood gave a positive reaction in a dilution of 1:80, while the venous blood test was negative. Cultures from the placental material also gave negative results.

Pregnancy Complicated by Amyotrophic Lateral Sclerosis.—Amyotrophic lateral sclerosis is a disease of the central nervous system. It does not affect the reproductive organs. In Murphy's opinion, therefore, there is no reason why women with this disease who are in the childbearing period should not become pregnant. It follows, also, that the probability of these women, hopelessly paralyzed as they are, going through pregnancy uneventfully and of delivering spontaneously a healthy baby is the same as for any normal woman. The same is true of interrupting the pregnancy. This should not be done because, in itself, this procedure would be more dangerous to the mother than allowing the pregnancy to continue; because, since the disease always terminates fatally, the continuation of the pregnancy does not affect the mother's prognosis; and finally, because the likelihood of obtaining a normal baby is probably as great as in a normal woman. One case is reported.

Comparison of Results Obtained in Induction of Labor by Means of Bougie or Bag.—A study made by Morton shows that the bougie is superior to the bag for the induction of labor, provided a sufficiently large bougie is employed, and that it should be used whenever haste is not essential. The bag is more efficient in bringing about the onset of labor but is attended by a definitely greater fetal mortality and maternal morbidity. When fetal death follows the use of the bag it is usually the result of prolapse of the cord. The maternal mortality is the same with either method.

Quinine Reaction Following Rectal Analgesia.—That quinine is absorbed when administered rectally in 20 grain (1.3 Gm.) doses, Gustafson says, is proved by clinical evidence. A history of severe idiosyncrasy to quinine is a contraindication to rectal analgesia as generally employed. In those rare cases of severe quinine idiosyncrasy, quinine should be omitted from the formula. Then rectal analgesia may be used with good results. He cites one case.

American J. Psychiatry, Baltimore

9: 461-605 (Nov.) 1929

Physical Nature of Nervous Action. R. S. Lillie, Chicago.—p. 461.
Modern Aspects of Psychiatry in General Hospital Practice. G. W. Henry, Ithaca, N. Y.—p. 481.
Nonspecific Protein Therapy in Neurosyphilis. H. Goldsmith, Baltimore. —p. 501.
Schizophrenia and Psychotherapy. A. A. Brill, New York.—p. 519.
Mechanisms in Certain Cases of Prolonged Schizophrenia. N. D. C. Lewis, Washington, D. C.—p. 543.
Research in Schizophrenia. H. S. Sullivan, Baltimore.—p. 553.
Treatment with Manganese Chloride of 181 Cases of Schizophrenia, Thirty-Three of Manic Depression and Sixteen of Other Defects or Psychoses at Ontario Hospital, Brockville, Ontario. W. M. English, Brockville, Ontario.—p. 569.

American J. Roentgenol. & Rad. Therapy, New York

22: 401-508 (Nov.) 1929

*Bronchial Obstruction: Relation to Atelectasis, Bronchopneumonia and Lobar Pneumonia. P. N. Coryllos and G. L. Birnbaum, New York. —p. 401.
Roentgenologic Studies of Mastoid in Infants. C. L. Martin, Dallas, Texas.—p. 431.
*Effect of Roentgen Rays on Reticulo-Endothelial System. E. A. Pohle, Madison, Wis.—p. 439.
*Generalized Abdominal Carcinomatosis of Ovarian Origin. G. E. Pfahler and J. Gershon-Cohen, Philadelphia.—p. 447.
*Cascade or Waterfall Stomach: Three Cases. M. Golob, New York.—p. 451.
Extrinsic Defects of Gastro-Intestinal Tract. D. Y. Keith, Louisville, Ky.—p. 455.
*Spotted Bones. W. S. Newcomet, Philadelphia.—p. 460.
Congenital Esophageal Atresia. E. C. Vogt, Boston.—p. 463.
Azygos Lobe of Lung. E. G. Stoloff, New York.—p. 466.
Right Unilateral Fused Pelvic Kidney Complicating Chronic Appendicitis. F. W. Currin, New York.—p. 468.
Pseudocyesis: Case. P. H. Cook, Worcester, Mass.—p. 469.

Relation of Bronchial Obstruction to Atelectasis, Bronchopneumonia and Lobar Pneumonia.—The importance of roentgenography in experimental investigations on atelectasis and pneumonia is shown by Coryllos and Birnbaum. Atelectasis, postoperative pneumonitis and lobar pneumonia (in their lobular, lobar or massive varieties) are shown to be produced by the same mechanism. Between them there are, in degree only, differences in local and general symptoms, roentgenographic signs and bronchoscopic observations. They are all due to a factor of great importance—bronchial obstruction. The rational treatment of these conditions should be based on their etiology and, as in every other obstructive lesion in the organism, should aim to relieve the obstruction and reestablish free drainage of the bronchial tree. Lobar pneumonia is a pneumococcic bronchial obstruction, with a combined atelectasis and pneumococcic cellulitis of the corresponding pulmonary area. Treatment should be directed not only against the bacteremia but chiefly against the local or pulmonary lesion. Carbon dioxide inhalation in 5 to 10 per cent concentration seems to possess a specific action against pneumococcic pulmonary infections.

Effect of Roentgen Rays on Reticulo-Endothelial System.—The function of the reticulo-endothelial system has been studied by Pohle by recording the elimination of congo red and trypan blue injections in the ear vein of rabbits after exposure to roentgen rays. His results are at variance with those reported by previous investigators. A toxic reaction following injection of trypan blue in rabbits if preceded by irradiation is described. This phenomenon has not been reported before. In view of the fact that the reticulo-endothelial system extends throughout the whole organism and as little is known about the factors controlling its function, no theory is offered to explain the results of his experiments but they are simply presented as the basis for further research.

Generalized Abdominal Carcinomatosis of Ovarian Origin.—Pfahler and Gershon-Cohen report three cases treated by irradiated autogenous ascitic fluid and deep roentgen therapy. The ascitic fluid was collected aseptically; 1,000 cc. was irradiated with 100 mg. of radium for twenty-four hours, was shaken from time to time, and was then put up in sterile 10 cc. ampules and injected subcutaneously three times weekly. High voltage roentgen therapy was given simultaneously in each case. The factors that made up an erythema dose were 200 kv., 4 ma., 96 minutes, 50 cm. distance, 0.5 mm. copper and 1 mm. aluminum as filter. The actual dose given at any one time was adapted to the patient's condition, being controlled in each instance by the use of the saturation curves, and the treatment was carried out according to the saturation method. No synergistic effect was obtained from this treatment.

Cascade or Waterfall Stomach.—This condition is defined by Golob as an hour-glass stomach of atypical form, characterized on roentgenologic examination by drawing up of the posterior wall so that the opaque mixture first fills the upper sac of the stomach and then cascades over into the lower sac. As in the case of hour-glass stomach, the deformity may arise from various causes. Of the three cases reported, one was due to carcinoma of the cardiac end of the stomach, one to lymphosarcoma intestinalis, and one to pressure caused by an accumulation of gas in the descending colon.

Spotted Bones.—Newcomet states that osteopoecilia or osteopathic condensans disseminata must be rare. From the fact that it is symptomless, its discovery is accidental.

Archives of Otolaryngology, Chicago

10: 575-716 (Dec.) 1929

Plastic Surgery of Ear, Nose and Face. A. D. Davis, San Francisco. —p. 575.
Cancer of Larynx. J. E. MacKenty, New York.—p. 585.
Use of Iodized Oil as Aid to Diagnosis in Sinus Conditions. A. L. Weil, New Orleans.—p. 603.
Simplified Investigation of Sphenoidal Sinus. M. C. Myerson, New York. —p. 616.
Limited Lesions of Basilar Membrane. E. P. Fowler, New York.—p. 624.
Epistaxis of Antral Origin. G. B. Trible, Washington, D. C.—p. 633.
Intradural Conditions in Relation to Rhinology and Otology. W. P. Eagleton, Newark, N. J.—p. 636.

Archives of Surgery, Chicago

19: 943-1118 (Dec.) 1929. Part I

*Value of Blood Amylase Estimations in Diagnosis of Pancreatic Disease. R. Elman, N. Arneson and E. A. Graham, St. Louis.—p. 943.
Fractures of Transverse Processes of Lumbar Vertebrae: Thirty-Three Cases. P. A. Quaintance, Los Angeles.—p. 968.
*Gross and Microscopic Structure of Thyroid Gland in Man. W. F. Rienhoff, Jr., Baltimore.—p. 986.
*Gallbladder. B. Halpert, Chicago.—p. 1037.
Fibroma of Vulva Containing Epithelial Inclusion Cyst. L. Brady, Baltimore.—p. 1061.
*Experimental Ileus: I. High Obstruction with Biliary, Pancreatic and Duodenal Secretions Short-Circuited Below Obstructed Point. H. P. Jenkins, Chicago.—p. 1072.
*Localization of Bacteria in Tissues of Lowered Resistance. W. W. Sager and A. C. Nickel, Rochester, Minn.—p. 1086.
Review of Urologic Surgery. A. J. Scholl and A. A. Kutzmann, Los Angeles; E. S. Judd, Rochester, Minn.; L. D. Keyser, Roanoke, Va.; G. S. Foulds, Toronto, Canada, and J. Verbrugge, Antwerp, Belgium. —p. 1090.

Value of Blood Amylase Estimations in Diagnosis of Pancreatic Disease.—The concentration of amylase in adult human plasma was determined by Elman et al. in sixty patients by means of a new method. Uniform values (from 4.3 to 6.8 units) were found in a series of twenty-five unselected cases in which there was no suspicion of disease of the acini of the pancreas. The same "normal" range of values was found in eleven additional cases in which the pancreas was actually examined and found to be normal, seven of these by palpation at operation and four by microscopic section after necropsy. Definite deviations from this "normal" range were found in twenty-one of twenty-three cases in which disease of the pancreas was found either at operation or at necropsy. In most instances a moderate or marked increase in the blood amylase was found (from 7.8 to 150 units); in some a definite decrease occurred (from 0.5 to 3.1 units). The significance of these observations has been pointed out. The determination of blood amylase has been of undoubted clinical value in a number of cases both in excluding suspected disease of the pancreas and in adding conclusive confirmatory evidence when the clinical picture was indefinite or vague. Jaundice, per se, has no influence on the amylolytic power of human blood unless disease of the pancreas is also present.

Gross and Microscopic Structure of Thyroid Gland in Man.—Rienhoff presents the results of a study of the normal human thyroid and also of the gland in cases of exophthalmic goiter from the standpoint not only of the individual follicles but also of the structure of the gland as a whole and of the various subdivisions or units into which the thyroid is divided. Heretofore, only small areas of the gland have been studied by means of the wax plate reconstruction method, with the result that the morphology of only a few follicles has been determined. In this study not only was the wax plate reconstruction used to investigate a larger area of thyroid tissue than had heretofore been reconstructed in wax, but the method of maceration and microdissection was also employed. By utilizing this larger area of the thyroid reconstructed by the wax plate method, Rienhoff was enabled to visualize the actual spatial relationship not only of the individual follicles but also of the various regions, and to determine the presence or absence of a true lobulation of the gland.

Gallstones.—The story of the formation of gallstones, Halpert says, is, briefly, as follows: A disturbed functioning of the gallbladder or an abnormal composition of the bile, or both, lead to a stagnation in the gallbladder of stone-forming constituents of the bile, the result of which is the formation of gallstones. The type of the concretion or concretions formed depends on the kind of biliary stasis that produced them. In a hepatogenous stasis in the gallbladder "pure gallstones" form, in a cystogenous stasis "mixed gallstones" form, and in an alternating stasis "combined gallstones" form. Thus, gallstones can tell the story of the gallbladder; the story of a gallbladder, on the other hand, cannot be told unless its contents are known.

High Obstruction with Biliary, Pancreatic and Duodenal Secretions Short-Circuited Below Obstructed Point.—To determine the rôle of the biliary, pancreatic and duodenal secretions in the rapid death from high intestinal obstruction, which usually occurs in from two to eight days in the dog, an experiment was devised by Jenkins in which the biliary, pancreatic and duodenal secretions were short-circuited into the bowel below the point of obstruction. These dogs lived from twelve to thirty-three days. Their general behavior was not markedly changed following the obstruction until a few days before death. They drank from 300 to 500 cc. of water a day, ate meat occasionally, vomited about twice a week, averaged an output of from 200 to 300 cc. of urine a day, and passed small black or brown stools about twice a week. The weight of the dogs gradually declined as much as one half in those which lived the longest; the average loss was 0.3 Kg., or 1.73 per cent, daily. Chemical examination of the blood showed a gradual fall in chlorides and a gradual rise in the plasma carbon dioxide capacity. The nonprotein and urea nitrogen often showed a slight preliminary fall during the first ten or twelve days, followed by a gradual rise, which became marked just before death. Necropsy revealed distention of the stomach and the obstructed portion of the jejunum, which was most noticeable just above the point of obstruction. The microscopic sections of the organs did not demonstrate any marked changes, with the exception of the liver, in which there was central hemorrhagic necrosis of the lobules. Death was due to

complications in most of the dogs, although the two that lived the longest died from no determinable cause other than the long-standing obstruction and starvation. The explanation for this marked prolongation of life when these three secretions are short-circuited is not clear. Either the secretions are responsible for the formation of a toxin in the obstructed bowel which was prevented in this experiment, or, when resorbed in the lower bowel, they prolong life by preventing a marked upset in the water and mineral balance of the body, which is thought to be the case when they fail to be resorbed.

Localization of Bacteria in Tissues of Lowered Resistance.—In rabbits which originally gave negative blood cultures, abscesses made by the subcutaneous injection of silver nitrate remained sterile. A number of such abscesses became infected secondarily after the intravenous injection of bacteria. The organism isolated from the abscess resembled the organism originally introduced intravenously and had the same elective localizing power. Sager and Nickel are of the opinion that these results may explain why some clean surgical wounds become infected.

19: 1119-1774 (Dec.) 1929. Part II

Pulmonary Tuberculosis. J. L. Yates, Milwaukee.—p. 1122.
*Direct Drainage of Tuberculous Pulmonary Cavities. H. Lilienthal, New York.—p. 1161.
*Phrenicectomy in Three Hundred Cases of Pulmonary Tuberculosis. E. S. Welles, Saranac Lake, N. Y.—p. 1169.
*Electrosurgical Method of Closed Intrapleural Pneumolysis in Artificial Pneumothorax. R. C. Matson, Portland, Ore.—p. 1175.
Therapeutic Pulmonary Collapse. D. B. Cole and F. S. Johns, Richmond, Va.—p. 1193.
Effects of Closed Pneumothorax and Phrenicotomy on Cardiorespiratory Function. W. DeW. Andrus and J. D. Wilson, Cincinnati.—p. 1205.
Functional Aspects of Bronchial Muscle and Elastic Tissue. C. C. Macklin, London, Canada.—p. 1212.
Cin-Ex Camera Studies of Tracheobronchial Tree. W. A. Hudson and H. A. Jarre, Detroit.—p. 1236.
*Production of Intrapulmonary Suppuration by Secondary Infection of Sterile Embolic Area. E. Holman and M. E. Mathes, San Francisco.—p. 1246.
*Bronchogenic Contamination in Embolic Abscess of Lungs. C. M. Van Allen, New Haven, Conn.; W. E. Adams and L. S. Hrdina, Chicago.—p. 1262.
*Embolism in Bronchogenic Infection of Lung. C. M. Van Allen, New Haven, Conn., W. E. Adams and L. S. Hrdina, Chicago.—p. 1279.
*Pulmonary Abscess. J. B. Flick, L. H. Clerf, E. H. Funk and J. T. Farrell, Jr., Philadelphia.—p. 1292.
Abscess of Lung: Case. F. A. C. Scrimger, Montreal, Canada.—p. 1313.
*Postoperative Pulmonary Hypoventilation. G. P. Muller, R. H. Overholt and E. P. Pendergrass, Philadelphia.—p. 1322.
Circulation in Compressed, Atelectatic and Pneumonic Lung. P. N. Coryllos and G. L. Birnbaum, New York.—p. 1346.
Surgical Treatment of Bronchial Asthma. E. W. Phillips and W. J. M. Scott, Rochester, N. Y.—p. 1425.
Decortication of Heart (Delorme) for Adhesive Pericarditis: Case. E. D. Churchill, Boston.—p. 1457.
Sensibility of Exposed Human Heart and Pericardium. J. Alexander, A. G. MacLeod and P. S. Barker, Ann Arbor, Mich.—p. 1470.
*Operations on Innominate Artery: Case of Successful Ligation. J. Greenough, Cooperstown, N. Y.—p. 1484.
Operations and Demonstrations of Cases in Barnes Hospital: 1 Thoracoplasty and Phrenicectomy. E. A. Graham and D. S. Allen, St. Louis.—p. 1545.
Id.: 2. Clinic Demonstrations. J. J. Singer and E. A. Graham, St. Louis.—p. 1552.
Id.: 3. Bronchography. J. J. Singer, St. Louis.—p. 1571.
Caliber Changes in Bronchi in Normal Respiration. P. Heinbecker, St. Louis.—p. 1574.
Changes in Shape and Size of Tracheobronchial Tree following Stimulation of Vagosympathetic Nerve. B. F. Francis, St. Louis.—p. 1577.
Emphysema Simulating Cardiac Decompensation. W. B. Kountz and H. L. Alexander, St. Louis.—p. 1584.
Experimental Abscess of Lung Following Ligation of Pulmonary Artery and Incision and Suture of Pulmonary Parenchyma. I. Y. Olch and H. C. Ballon, St. Louis.—p. 1586.
Origin of Scar Tissue in Healing of Lung. I. Y. Olch and H. C. Ballon, St. Louis.—p. 1595.
Bacterial Flora of Treated and Untreated Abscesses of Lung. P. L. Varney, St. Louis.—p. 1602.
Early Carcinoma of Lung. S. H. Gray and J. Cordonnier, St. Louis.—p. 1618.
Consequences of Variations in Mediastinal Pressure; Mediastinal and Subcutaneous Emphysema. H. C. Ballon and B. F. Francis, St. Louis.—p. 1627.
Comparison of Iodized Oil and Brominized Oil. J. J. Singer and B. F. Francis, St. Louis.—p. 1660.
Effects of Pressure on Heart: Advisability of Decompression of Greatly Enlarged Hearts. D. S. Allen and E. A. Graham, St. Louis.—p. 1663.
Cytology of Serous Effusions: Tumor Cells. A. Goldman, St. Louis.—p. 1672.
Surgical Treatment of Intrathoracic Tumors. S. W. Harrington, Rochester, Minn.—p. 1679.
Treatment of Some Unusual and Difficult Cases of Empyema. C. D. Lockwood, Pasadena, Calif.—p. 1726.
Empyema: Treatment by Tidal Irrigation and Suction. D. Hart, Baltimore.—p. 1732.

Direct Drainage of Tuberculous Pulmonary Cavities.—Two cases are reported by Lilienthal in which improvement followed direct drainage of a tuberculous pulmonary cavity through the wall of the chest. One case is reported in which an apical cavity discharging copiously by mouth was drained into an open pleural tuberculous empyema.

Phrenicectomy in Three Hundred Cases of Pulmonary Tuberculosis.—Welles states that paralyzing the hemidiaphragm by evulsing or crushing the phrenic nerve is a simple procedure which is of distinct value in a wide variety of cases of pulmonary tuberculosis. Its value is fully as great in cases of apical lesions as in those in the lower lobe of the lung. The operation gave beneficial results in approximately two thirds of a series of 271 cases. Less than 2 per cent of the patients seemed actually made worse, so that it is reasonably safe to assure them that no harm will come of the operation even if it fails to do good.

Electrosurgical Method of Closed Intrapleural Pneumolysis in Artificial Pneumothorax.—Matson's experience with the electrosurgical method has given him confidence in this method of cutting adhesions. Control of bleeding is the most dangerous problem and requires thorough knowledge of the character of the currents used. Electrosurgical cutting is accomplished without heat or smoke to disturb the view. There is a minimum of tissue reaction afterward, and while more complicated and technically more difficult than the galvanocautery method, it is without doubt a notable advance in this branch of surgery.

Production of Intrapulmonary Suppuration by Secondary Infection of Sterile Embolic Area.—Experimental evidence is presented by Holman and Mathes indicating that infected emboli invariably produce marked pathologic changes in the parenchyma of a lung. Sterile emboli, on the other hand, usually produce little gross evidence of their presence in the deflated state of the lung. Sterile emboli may produce hemorrhagic infarction and abscess formation as the result of secondary infection of the embolic area by circulating organisms. Observations in the laboratory indicate that in the presence of suppurating wounds a sterile embolus lodged in the lung may produce an intrapulmonary abscess as the result of secondary infection of the embolic area by circulating organisms.

Bronchogenic Contamination in Embolic Abscess of Lungs.—Attention is called by Van Allen et al. to the fact that a large group of postoperative abscesses of the lung exists which is not adequately explained as to etiology either by embolic or by bronchogenic inoculation, acting alone. The effect of a combination of these two avenues of inoculation of the lung was tested experimentally. It was found that embolic abscesses of the lung could be enhanced in virulence and chronicity by insufflation of infectious material into the bronchus. This combination of embolic and bronchogenic inoculation may explain the pathogenesis of the obscure group of postoperative abscesses of the lung. Superinoculation by aspiration of pharyngeal secretions may be responsible chiefly for the maintenance of chronic abscess of the lung, both postoperative and postpneumonic, and for recrudescences in bronchiectasis.

Embolism in Bronchogenic Infection of Lung.—Van Allen et al. assert that abscess develops much more readily from embolic than from intrabronchial inoculation of the lung, and that the lung appears to be in general much more resistant to necrosis and suppuration than are other tissues. This principle was applied to explain the pathogenesis of certain suppurative diseases of the lungs; viz., postoperative abscess of the lung especially following sterile operations, postpneumonic abscess of the lung and empyema, and relapses in suppurative diseases of the lung in general. Hemorrhagic infarct may have a similar origin.

Pulmonary Abscess.—Flick et al. contend that a diagnostic bronchoscopy should be done in all cases of pulmonary abscess irrespective of the method of treatment to be employed. The sine qua non in treatment is the establishment of adequate drainage. This may be accomplished in many cases by con-

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servative measures which include repeated bronchoscopic aspirations. The indications for surgical treatment are outlined. Conservative treatment should not be continued too long if distinct benefit is not obtained, since complications occur which increase the risk and decrease the chances of recovery with surgical intervention.

Postoperative Pulmonary Hypoventilation.—Muller et al. conclude that the varying degrees of partial atelectasis that occur after upper abdominal operations are due primarily to diaphragmatic elevation and restriction.

Operations on Innominate Artery; Successful Ligation.—A case of successful ligation of the innominate, carotid and subclavian arteries is reported by Greenough. Ninety-one cases of operation on the innominate artery, 75 per cent of which were ligation, are collected from the literature and summarized. The total mortality after ligation is 56 per cent. The mortality in the last twenty-five cases is 16 per cent. The operation is justifiable and, if contemplated, should be done early.

Endocrinology, Los Angeles

13: 427-520 (Sept.-Oct.) 1929

Tetania Parathyreopriva Treated for a Year with Parathyroid Extract-Collip with Eventual Death and Autopsy: Case. H. Lisser and H. C. Shepardson, San Francisco.—p. 427.
Calcification in Pituitary Adenomas. E. M. Deery, Boston.—p. 455.
Hebephrenic Dementia Praecox with Marked Improvement Under Thyroid Treatment. R. G. Hoskins and F. H. Sleeper, Worcester, Mass.—p. 459.
Blood Sugar Curves Before and After Thyroidectomy. B. Holcomb, Portland, Ore.—p. 467.
Coexistent Diabetes Mellitus and Diabetes Insipidus: Case. J. S. Sweeney, Dallas, Texas.—p. 477.

Georgia M. Assn. Journal, Atlanta

18: 542-588 (Dec.) 1929

Relationship Between Premedical Education and Medical Education. S. Graves, University, Ala.—p. 542.
Maternity Hygiene Program of Savannah and Chatham County. D. L. Seckinger, Savannah.—p. 549.
Acute Intestinal Obstruction. W. J. Cranston, Augusta.—p. 553.

Journal of Lab. & Clin. Medicine, St. Louis

15: 205-310 (Dec.) 1929

*Tuberculosis in Guinea-Pigs. H. A. Reisman, Jamaica, N. Y., and A. B. Baylis, New York.—p. 205.
Plasma Protein in Relation to Suspension Stability of Erythrocytes and Precipitation of Serum Protein with Aluminum Sulphate. L. R. Jones, St. Louis.—p. 209.
Carbohydrate Metabolism in Acromegaly. M. Wishnofsky and C. S. Byron, New York.—p. 216.
*Fat Metabolism: I. Fat Tolerance in Obesity. H. R. Rony and A. J. Levy, Chicago.—p. 221.
Relationship of Potassium to Depressor Effect of Liver Extract. R. H. Major and C. J. Weber, Kansas City, Kan.—p. 229.
Factors Which May Influence Sugar Content of Blood and Urine. E. M. Watson, London, Canada.—p. 234.
Pharmacology of Local Anesthetics: II. Irritation as Produced by Local Anesthetics on Rabbit's Cornea. H. W. Coles and C. L. Rose, Indianapolis.—p. 239.
Estimation of Hemoglobin: New Hemoglobinometer. F. F. Schwentker, Baltimore.—p. 247.
Micromodification of B. Gruskin's Determination of Urea in Blood. H. Tauber and B. Kwartin, New York.—p. 260.
Simple Central Catalyzing Station to Produce Anaerobiosis. J. Cohen, New York.—p. 262.
Suggestion for Collodion Sacs. M. J. Breuer, Lincoln, Neb.—p. 265.
Modified Varney Jar for Cultivation of Anaerobes by Means of Phosphorus. S. R. Damon, Baltimore.—p. 268.
Application of Process of Circulatory Solution to Paraffin Infiltration of Tissues. W. F. Sheridan, Washington, D. C.—p. 270.
Wassermann Test with Glycerinated Human Serum. E. H. Ruediger, Hollywood, Calif.—p. 272.
Comparison of Four Blood-Sugar Methods. E. R. Norris and W. E. Gibb, Seattle.—p. 281.
New Type of Tissue Crusher. A. C. Nickel, Rochester, Minn.—p. 284.
Simple and Accurate Hematocrit. M. M. Wintrobe, New Orleans.—p. 287
New Rapid Paraffin Method for Tissue Sections. I. M. Vilkomerson, New York.—p. 290.
Van den Bergh Reaction. H. Shay and E. M. Schloss, Philadelphia.—p. 292.

Tuberculosis in Guinea-Pigs.—According to Reisman and Baylis, tuberculosis is quite prevalent in apparently normal guinea-pigs. An intracutaneous tuberculin test reveals the presence of a tuberculous lesion in guinea-pigs. Guinea-pigs injected with dead tubercle bacilli did not develop any sensitivity to tuberculin. Guinea-pigs may have a preexisting tuberculous focus similar to that induced by inoculation. Guinea-pigs of uncertain history should be tested with tuberculin before being employed for the inoculation diagnosis of tuberculosis and other laboratory experiments relative to tuberculosis.

Fat Tolerance in Obesity.—The effect of the administration of a pint of 20 per cent cream on the blood plasma lipids of eight normal and eighteen obese subjects was studied by Rony and Levy. No definite change resulted in plasma cholesterol. The fatty acid content was increased in the normal subjects and a fairly uniform curve resulted, a maximum content being reached from three to five hours after the meal of cream. The results in the eighteen obese subjects showed that seven gave a normal response and that eleven gave an abnormal response. Of these eleven cases, five showed a "high" tolerance, the fatty acid content decreasing after the meal, and six showed a "low" tolerance, the fatty acid content increasing more than 116 mg. for the highest of the normal cases. A correlation exists between the "sugar tolerance" and the "fat tolerance" in obese subjects. If the sugar tolerance is high, the fat tolerance is high; if the sugar tolerance is low, the fat tolerance is low; if the sugar tolerance is "average," the fat tolerance is "average."

Journal of Pharmacol. & Exper. Therap., Baltimore

37: 379-500 (Dec.) 1929

Pregnancy Response of Uterus of Cat. H. B. Van Dyke, Chicago, and R. G. Gustavson, Denver.—p. 379.
Antagonization of Narcotic Action of Magnesium Salts by Potassium Sodium and Other Monovalent Cations with Contribution to Theory of Narcosis and Analgesia. A. D. Hirschfelder, Minneapolis.—p. 399.
Reaction of Lead with Constituents of Erythrocytes. L. C. Maxwell and F. Bischoff, Santa Barbara, Calif.—p. 413.
Influence of Morphine, Papaverine and Quinidine on Heart. C. M. Gruber and P. I. Robinson, St. Louis.—p. 429.
Comparative Effects of Synthalin and Insulin on Depancreatized Dog. E. P. Ralli and A. M. Tiber, New York.—p. 451.
Conversion of Cyanide into Thiocyanate in Man and in Alkaline Solutions of Cystine. M. Bodansky, Galveston, Texas.—p. 463.
Effect of Pituitary on Bird. R. Morash and O. S. Gibbs, Halifax, Nova Scotia.—p. 475.
Diuresis and Individual Tolerance in Experimental Barbital Poisoning. W. E. Gower and A. L. Tatum, Madison, Wis.—p. 481.

Kansas M. Soc. Journal, Topeka

30: 401-436 (Dec.) 1929

Diabetes Mellitus of Infectious Origin. F. H. Penwell, Marquette.—p. 401.
Podalic Version. H. J. Stacey, Leavenworth.—p. 407.
Modern Treatment of Pulmonary Cavitation. F. P. Miller, Los Angeles.—p. 409.
Differential Diagnosis of Cathartic Colitis. A. S. Welch, Kansas City.—p. 412.
Public Health—Past, Present and Future. E. G. Brown, Topeka.—p. 416.

Medical J. & Record, New York

130: 669-728 (Dec. 18) 1929

Evolution of Therapeutics. S. A. Yesko, Rochester, Minn.—p. 669.
Infected Seminal Vesicles and Treatment. A. L. Wolbarst, New York.—p. 673.
New Pyelography. W. S. Pugh, New York.—p. 675.
Treatment of Tuberculous Cases in Light Department of General Hospital. J. Wilson, London, England.—p. 679.
*Chronic Pancreatitis and Metallic Taste. S. P. Sobel, New York.—p. 682.
Muscular System as Causative and Contributing Factor in Deformities of Human Skeleton. H. Keller, New York.—p. 684.
Rectal Examination for Life Insurance. L. Goldbacher, Philadelphia.—p. 686.
Interrelations of Religion, Sex and Medical Science. J. A. Thomas, Kings Park, N. Y.—p. 687.
Series of Interesting Cases. M. D. Bloomfield, Philadelphia.—p. 689.
Persistent Priapism of Leukemia Treated by Radiation Therapy. I. I. Kaplan, New York.—p. 690.
Instruments for Measuring Ultraviolet Radiation and Unit of Dosage in Ultraviolet Therapy. W. W. Coblentz, Washington, D. C.—p. 691.
Radiation and Resistance to Infection. A. Eidinow, London.—p. 695.
Phototherapy in England. R. K. Brown, London.—p. 699.
Physiologic Effects of Ultraviolet, Visible and Infra-Red Energy. H. Laurens, New Orleans.—p. 702.
Concerning the Plague. E. P. Scarlet, Iowa City.—p. 707.
Ship Fever in French Canada: Case. W. R. Riddell, Toronto.—p. 713.

Chronic Pancreatitis and Metallic Taste.—Sobel stresses the importance of a metallic taste in the diagnosis of chronic pancreatitis. He cites four cases in which the metallic taste was present. Some describe the taste as that of iron, copper,

brass, zinc or just metallic. This metallic taste comes on at intervals, especially during so-called digestive upsets, or it may be constantly present.

New England J. of Medicine, Boston

201: 1129-1182 (Dec. 5) 1929

*Gastrojejunostomy with Transverse Jejunal Incision. T. S. Moise, Bangor, Me.—p. 1129.
Melanotic Sarcoma of Small Intestine. F. B. Lund, Boston.—p. 1133.
Responsibility of Medical Profession to Citizens of State. H. H. Amsden, Concord, N. H.—p. 1137.
Review of One Year's Autopsy Service. H. N. Kingsford, Hanover, N. H.—p. 1141.
Diaphragmatic Hernia. L. R. Hazzard, Portsmouth, N. H.—p. 1145.
Diagnostic and Therapeutic Aspects of Infections of Female Genital Organs. H. Schmitz, Chicago.—p. 1149.
On College Disappearances: Analysis of Case. L. H. Horton, Boston.—p. 1155.

201: 1183-1228 (Dec. 12) 1929

Treatment of Abdominal Adhesions by Use of Electrosurgical Knife. E. H. Trowbridge, Worcester, Mass.—p. 1183.
Carcinoma of Mouth and Lip. G. A. Leland, Boston.—p. 1196.
Responsibility of Dentist in Cancer of Mouth. F. P. McCarthy, Boston.—p. 1199.
Tumors of Mouth and Jaws. V. H. Kazenjian, Boston,—p. 1200.
Cancer of Nose and Throat. E. W. Herman, Boston.—p. 1201.

Gastrojejunostomy with Transverse Jejunal Incision.—The faulty mechanics in gastro-intestinal anastomoses made according to the usual methods, Moise says, are inherent in the longitudinal jejunal incision. This incision severs the circular muscle fibers throughout the length of the stoma with consequent interference with peristalsis and the development of conditions impairing the efficiency of the anastomosis. In certain instances, dilatation of the stomach leads to the formation of a valvular obstruction at the anastomosis. These shortcomings have been obviated by the utilization of a transverse jejunal incision in making gastro-intestinal anastomoses. After this procedure the jejunal loops naturally gravitate downward in a "trouser leg" shape which is the optimal position for maintenance of the patency of the intestinal lumen. The same tendency after gastro-enterostomies with the usual longitudinal jejunal incision may tend to kink and partly occlude the lumen. The transverse jejunal incision has been used in simple posterior gastro-enterostomies and in operations of the Billroth II and Polya types. The results in properly selected cases have been excellent.

New York State J. of Medicine, New York

29: 1497-1557 (Dec. 15) 1929

Interpretation of Gastric Analyses. A. F. R. Andresen, New York.—p. 1497.
Health Service in Suffolk County. A. W. Freeman, Baltimore.—p. 1503.
Toxemias of Pregnancy. J. O. Polak, New York.—p. 1505.

Northwest Medicine, Seattle

28: 535-584 (Dec.) 1929

Intracranial Hemorrhage: Six Cases. D. G. Dickerson, Seattle.—p. 535.
Moles, Pigmented and Nonpigmented, and Other Skin Defects in Precancerous Stage. J. C. Bloodgood, Baltimore.—p. 543.
Cancer Prevention. H. A. Dowd, Gervais, Ore.—p. 547.
Cauterization of Cervix. A. B. Shaw, Longview, Wash.—p. 550.
Fibromyomatosis Uteri. J. H. Sayer, Seattle.—p. 553.
Fibroids from Surgical Standpoint. W. W. Pascoe, Tacoma, Wash.—p. 555.
*Quinine in Treatment of Epidemic Hiccup. J. F. Griggs, Tacoma, Wash.—p. 557.
Spinal Anesthesia: Technic and Application. W. T. Phy, Hot Lake, Ore.—p. 560.
Administration of Digitalis. H. P. Rush, Portland, Ore.—p. 562.
Insulin as Tonic. C. F. Davidson, Seattle.—p. 564.
Physical Therapy Department: Scope in General Hospital. R. Kovacs, New York.—p. 567.
Medical Defense and Damage Suits. E. J. Cannon, Spokane, Wash.—p. 572.

Quinine Treatment of Epidemic Hiccup.—Griggs has treated eight cases of epidemic hiccup by quinine and urea hydrochloride, 7½ grains (0.5 Gm.), into the buttock. He endorses the value of this treatment. The alkaloids of cinchona depress peripheral sensory nerve organs and are effective in relieving pain and neuroses. A definite inhibitory effect can be expected from these alkaloids on reflexes and various involuntary movements. He suggests that it might be profitable to seek an optimal dosage of quinine combined with atropine for the treatment of such spasmodic ailments as whooping cough, measles, cardiospasm, enuresis and hiccup.

Oklahoma State M. Assn. Journal, Muskogee

22: 407-442 (Dec.) 1929

Influence of Diet in Skin Diseases. C. L. Brundage, Oklahoma City.—p. 407.
Diagnosis and Treatment of Ureteral Calculus. H. S. Browne, Tulsa.—p. 410.
Urinary Incontinence and Surgical Treatment. B. A. Hayes, Oklahoma City.—p. 412.
Interesting Kidney Cases—Lantern Slide Demonstrations. S. D. Neely, Muskogee.—p. 416.
Renal Colic. O. R. Gregg, Enid.—p. 417.
Hematuria. J. W. Rogers, Tulsa.—p. 419.
Pulmonary Tuberculosis. F. H. Clark, Washington, D. C.—p. 420.

Physical Therapeutics, New York

47: 643-712 (Dec.) 1929

High Frequency and Induced Currents. F. DeKraft, New York.—p. 643.
High Frequency Currents. B. B. Grover, Colorado Springs, Colo.—p. 651.
Use of Galvanism in Treatment of Diseases of Mucous Membrane. F. H. Morse, Boston.—p. 661.
Photosensitization. F. T. Woodbury, New York.—p. 670.
Modality. J. C. Elsom, Madison, Wis.—p. 679.

South Carolina M. Assn. Journal, Greenville

25: 575-597 (Dec.) 1929

*Rectal Administration of Quinine in Treatment of Malaria. H. C. Rigby and C. Rigby, Spartanburg.—p. 579.
Acute Rheumatic Infection in Children. F. K. Shealy, Clinton.—p. 581.
Use and Abuse of Prolonged Immobilization in Plaster of Paris and Other Splints. A. T. Moore, Columbia.—p. 583.
First Reported Cases of Malta Fever in South Carolina. E. A. Hines, Seneca.—p. 586.
Bureau of Health Education. C. O'H. Laughinghouse, Raleigh.—p. 595.

Rectal Administration of Quinine in Treatment of Malaria.—The Rigbys advocate the rectal drip method of administration of quinine in the treatment of malaria. They dissolve 30 grains (2 Gm.) of quinine sulphate or hydrochloride in 1,000 cc. of physiologic solution of sodium chloride, and inject it in the course of twenty-four hours. They have also tried dissolving the quinine in distilled water and adding dextrose to this solution to be used as a rectal drip. The quinine seems to be absorbed just as well in this solution as in the salt solution, and there is the added advantage of the dextrose to give nourishment to a patient who has been unable to retain food for several days. The rectal drip offers a good method of giving fluid to a patient dehydrated from continuous vomiting, while at the same time providing a medium through which the quinine may be administered.

Wisconsin Medical Journal, Madison

28: 577-634 (Dec.) 1929

*Liver Therapy and Pernicious Anemia Problem. W. S. Middleton, Madison.—p. 577.
Bronchoscopy. W. M. Nesbit, Madison.—p. 589.
Modern Methods of Diagnosis in Gastro-Intestinal Disorders. R. C. Blankinship, Madison.—p. 593.
Malaria in Children. M. G. Peterman, Milwaukee.—p. 597.

Liver Therapy and Pernicious Anemia Problem.—Middleton relates his experience with liver extracts in the treatment of pernicious anemia. He has found them to be as potent in this action as has whole liver. The duration of the induced remissions is indeterminate, and a certain reduced dosage of liver or its extract after a satisfactory blood level has been reached is justified. This reduction will avert the development of a polycythemia. On the other hand, relapses occur after variable periods in cases of pernicious anemia unsupported by adequate liver. In four relapsing cases an apparent quantitative reaction has been noted to the optimal dosage of liver. The optimal dosage may well vary in different individuals or in the same individual with inhibiting factors, as infections, transfusions and central nervous involvement. Neither whole liver nor the extracts as yet available have in any way influenced the achlorhydria or the course of the subacute combined degeneration of the cord. This circumstance gives further weight to the older conception of an interdependence of hematopoietic, digestive and central nervous manifestations on a common etiologic background; and great as is the present advance, it gives the answer only to the pathogenesis of the hematopoietic phase of the pernicious anemia problem.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. Actinotherapy, London

4: 179-198 (Dec.) 1929

Light Treatment of Tuberculosis of Eyes. W. Hoffman.—p. 182.
Prophylactic Action of Ultraviolet Rays in Rickets. K. Huldschinsky. —p. 185.
Influence of Diathermy on Circulatory System and Disorders. E. K. Russell.—p. 187.
New Filament Lamp for Actinotherapy. B. D. H. Watters.—p. 189.
Medical Review of British Spas: VI. Royal Leamington Spa. M. B. Ray.—p. 190.
Place of General Ultraviolet Irradiation in Treatment of Whooping Cough. L. Shillito.—p. 192.
Empyema Treated by Ultraviolet Light: Two Cases. T. C. McKenzie and J. Rowatt.—p. 193.
Light and Rickets. F. Peemöller.—p. 193.

International J. Psycho-Analysis, London

10: 383-565 (Oct.) 1929

Fear, Guilt and Hate. E. Jones.—p. 383.
Psychogenic Material Related to Function of Semicircular Canals. T. M. French.—p. 398.
Active Psychoanalytic Technic and Will to Recovery. R. LaForgue.—p. 411.
Danger Situations of Immature Ego. N. Searl.—p. 423.
Infantile Anxiety-Situations Reflected in Work of Art and in Creative Impulse. M. Klein.—p. 436.
Two Dreams. N. J. Symons.—p. 443.
Inner Injunction to Make Mental Note and Fear of Being Eaten. O. Fenichel.—p. 447.

Lancet, London

2: 1181-1238 (Dec. 7) 1929

Intrathoracic and Pulmonary New Growths. M. Davidson.—p. 1181.
*Electrocardiographic Study of Human Heart During and After Nitrous Oxide Anesthesia. G. E. S. Ward and S. Wright.—p. 1184.
*Asthma in Children: Value of Sugar in Prevention and Treatment. A. A. Osman.—p. 1187.
Emotion and Acute Glaucoma. W. S. Inman.—p. 1188.
Kienböck's Disease: Case. E. W. Riches.—p. 1189.
Meningo-Encephalitis Following German Measles: Case. J. H. E. Brock. —p. 1190.

Electrocardiographic Study of Human Heart During and After Nitrous Oxide Anesthesia.—The changes in the human heart during pure nitrous oxide anesthesia have been studied by Ward and Wright electrocardiographically in sixteen subjects. The principal results obtained were (1) tachycardia; (2) reduction, abolition or inversion of the T wave in lead II.; (3) reduction in the R wave; (4) variable changes in the P wave; (5) little change in the P-R interval. The tachycardia and modifications in the T wave are attributed to the accompanying anoxemia.

Value of Sugar in Prevention and Treatment of Asthma in Children.—An increased allowance of sugar, as such (i. e., not as starchy foods), in the diet alone was sufficient to prevent recurrence of asthma in four children over a considerable period. The treatment consisted in giving 3 drachms (11.6 Gm.) of powdered dextrose in lemonade three times a day, in between meals, with extra sugar and "sweets." In each case this treatment resulted in a marked improvement in the general health and spirits, in addition to the complete disappearance of the asthma. No evidence has been obtained as to the mode of action of sugar in these cases, but Osman is inclined to attribute its beneficial effects to the improvement in the general health.

2: 1239-1292 (Dec. 14) 1929

Modern Radiologic Developments in Germany. F. Roberts.—p. 1239.
*Significance of Afferent Impulses from Skin in Mechanism of Abdominal Pain. J. Morley.—p. 1240.
Use of Chloretone. W. E. Wynter.—p. 1245.
*Acute Disseminated Encephalomyelitis Following Vaccination. C. D. Coyle and E. W. Hurst.—p. 1246.
Dilatation of Auricles Resulting from Heart Block and Producing Pressure Symptoms. A. A. F. Peel.—p. 1248.
Treatment of Neurasthenia. A. W. Hendry.—p. 1249.
*Simple Method of Treating Cavernous Nevi. G. B. Dowling.—p. 1251.

Significance of Afferent Impulses from Skin in Mechanism of Abdominal Pain.—In patients with distinctly localized abdominal pain, subcutaneous infiltration of the painful area with procaine hydrochloride causes complete or partial relief from pain. The contention that these observations afford direct experimental support for the viscerosensory reflex theory of referred pain is criticized by Morley. In patients with pain in the shoulder tip from irritation of the peritoneum under the diaphragm, subcutaneous infiltration of the area in which the pain is felt causes complete or partial relief from pain. These observations afford strong evidence in favor of the peritoneocutaneous radiation theory of referred pain as opposed to the viscerosensory reflex theory.

Acute Disseminated Encephalomyelitis Following Vaccination.—Coyle and Hurst had the opportunity for continuous observation during life with a complete necropsy seventeen hours after death in a case of so-called postvaccinal encephalitis. The clinical picture presented by this case of encephalomyelitis is in accordance with the descriptions of similar cases occurring after vaccination. The overwhelming character of the infection was striking. Histologically the lesions in the case conform closely to the descriptions given by Turnbull and McIntosh, and others, of the disseminated encephalomyelitis that has during recent years occurred from time to time as an early sequel to vaccination. An unusual feature of the case is the almost complete limitation of the cord lesions to the right half of the cord. Vaccination had been performed on the left arm. No lesions were detected in the brachial plexus or intervertebral ganglions on the vaccinated side. In their essential characters the lesions do not differ from those in the similar cases following measles and certain other infective states, or arising during the course of antirabic treatment.

Simple Method of Treating Cavernous Nevi.—Dowling has treated five cases by injecting solution of quinine dihydrochloride and urethane; the result has been satisfactory.

Annales de l'Institut Pasteur, Paris

43: 1229-1389 (Oct.) 1929

Preventive Vaccination Against Tuberculosis by Subcutaneous Injection of B C G. J. Heimbeck.—p. 1229.
Leukocyte Count in Children Vaccinated with B C G. G. Pittaluga and F. Garcia.—p. 1233.
Intracerebral Injection of Vaccine Virus in Monkeys. H. Aldershoff, A. B. F. A. Pondman and A. W. Pot.—p. 1268.
Direct Count of Colon Bacilli. Diénert and Étrillard.—p. 1278.
Serum Flocculation. R. Dujarric de la Rivière, É. Roux and N. Kossovitch.—p. 1282.
Peripneumonia of Bovine Animals: Morphology and Life Cycle of Bacillus. J. Nowak.—p. 1330.
*Relation Between Parasitic Infestation of Alimentary Canal and Chemical Composition of Gastric Juice. R. Deschiens.—p. 1353.
Separation of Functions in Anopheles Maculipennis. N. H. Swellengrebel. —p. 1370.

Relation Between Parasitic Infestation of Alimentary Canal and Chemical Composition of Gastric Juice.—Deschiens states that the chemical composition of the gastric juice in patients with and without parasitic infestation is much alike. In forty-two patients the incidence of hyperchlorhydria and anachlorhydria was 31 per cent; in fifty patients with gastro-enteric disorders, but in whom parasites were not found, the incidence of hypochlorhydria and anachlorhydria was 34 per cent. Cysts of *Giardia intestinalis*, *Endameba coli* and *Endameba histolytica* exposed for from two to three hours (the average time of digestion after a large meal) to normal gastric juice, hyperacid gastric juice and solutions of hydrochloric acid in increasing concentration at a temperature of 37 C. (98.6 F.) remained alive. Even at a concentration of 0.62 per cent hydrochloric acid, as many as 12.5 per cent survived. On the basis of these results, Deschiens states that normal or hyperacid gastric juice does not inhibit parasitic infestation and that if gastric insufficiency favors parasitic infestation, it is not because of the decreased acidity of the gastric juice but because of the resulting intestinal disturbances.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

53: 1179-1218 (Oct. 28) 1929

Index of Refraction in Pleurisy of Rheumatic Origin. E. May and J. Stchelin.—p. 1180.
Infection of Ovarian Cyst with Typhoid Bacillus. J. Tapie, L. Morel, A. Lyon and F. X. Bertrand.—p. 1184.
*Accidental Transmission of Malaria Induced by Malariotherapy. P. Chevallier and R. Schwob.—p. 1189.
*Effect of Repeated Inoculation in Malariotherapy. P. Chevallier.—p. 1192.
Dextrocardia: Case. F. Trémolières and P. Véran.—p. 1194.
Clinical Value of Serofloculation Test (Henry) in Malariotherapy. B. Le Bourdellès and R. Liégeois.—p. 1198.

Accidents Due to Ergotamine Tartrate in Treatment of Exophthalmic Goiter. D. Adlersberg and O. Porges.—p. 1202.
Proteoclastic Action of Thyroid. M. Loeper, A. Lemaire and J. Tonnet. —p. 1206.
*Reaction of Liver to a Wine Test. M. Loeper, L. Michaux and S. de Sèze.—p. 1212.

Accidental Transmission of Malaria by Malariotherapy.—A case of malaria in a hospital in which other patients have undergone malariotherapy is an isolated occurrence and Chevallier and Schwob support Wagner-Jauregg's statement that malariotherapy cannot result in an endemic of malaria. In their patient, a woman aged 26, symptoms of tertian malaria were noted four weeks after hospitalization for chronic postencephalitic parkinsonism. The presence of mosquitoes in this particular hospital was noted, but it could not be determined whether there were *Anopheles* among them.

Effect of Repeated Inoculation in Malariotherapy.—Chevallier states that shortening of the period of incubation has been noted in malariotherapy in patients who have previously had malaria. This occurrence, together with the severity of the onset, points to the fact that the disease may have been latent. In cases in which reinoculation has not shown the desired effect, Chevallier has "completed" the treatment by inducing a febrile attack through intravenous and subcutaneous injections of a small amount of blood derived from a patient with malaria.

Reaction of Liver to a Wine Test.—Loeper et al. report the results of their test in six patients and in normal persons. Two of the patients had icterus; two were alcoholic addicts; one had hypertrophic cirrhosis, and one had cancer of the liver. In two patients with an enlarged liver the sulphur coefficient, which runs parallel to the nitrogen excretion, was increased from 65 to 71 per cent in one patient and from 71 to 82 per cent in the other. In the patient with cancer of the liver, on the other hand, the coefficient dropped from 68 to 55 per cent. On the basis of their experience, the authors state that the ingestion of wine stimulates the liver cells and that natural wine, containing but little tannin and taken in moderate quantity, has no harmful effect on normal persons. In patients with functional insufficiency of the liver, wine has a beneficial effect and supports the organism in combating food poisoning. The addition of wine to certain hepatic medicines reinforces their action; however, it should be noted that the effect is inhibited if too large or too frequent doses are administered.

Paris Médical

2: 325-364 (Oct. 19) 1929

Kidney Disease During 1929 (Review). F. Rathery.—p. 325.
Lipoid Nephrosis. C. Achard.—p. 332.
Mechanism of Renal Secretion. L. Ambard.—p. 343.
Urology During 1929 (Review). R. Dossot.—p. 346.
*Complete Cystectomy in Cancer of Urinary Bladder. B. Fey and H. Bompart.—p. 359.
*Rôle of Kidney in Pain in Right Flank. E. Papin.—p. 362.

Complete Cystectomy in Cancer of Urinary Bladder.—From a study of 108 cases reported in the literature, Fey and Bompart consider that this operation has been unjustly rejected. Under certain conditions, such as early operation, done in two stages with preliminary iliac ureterostomy, the results should in the future be still better than heretofore. This operation, with its technic improved by experience, may become the preferred method in the treatment of cancer of the urinary bladder.

Rôle of Kidney in Pain in Right Flank.—Papin points to the complexity of the problem. On the basis of reports in the literature and his personal experience, he distinguishes three main types of patients. In the first group, a characteristic disease may be present but the diagnosis is difficult. Or a patient may show various symptoms of a pathologic condition. In this case the principal lesion, which may or may not coincide with the initial focus, should be treated first. Lastly, in certain patients (especially in women) painful syndromes are noted which contraindicate any serious intervention. In these cases medication, diet, and the use of abdominal bandages and analgesics are indicated, for, as Papin points out, atony of the organs may be responsible for the condition. Neither intestinal nor pelviureteral atony, however, can as yet be relieved by surgery.

Presse Médicale, Paris

37: 1477-1492 (Nov. 13) 1929

*Roentgenography of Chest in Children Vaccinated with B C G. L. Sayé. —p. 1477.
"Dust Cells" in Lungs. A. Jousset.—p. 1478.

Roentgenography of Chest in Children Vaccinated with B C G.—During a period of four and one-half years Sayé studied 129 children who had been vaccinated with B C G and 124 nonvaccinated children. Any child who contracted a disease of the respiratory tract (such as influenza or whooping cough) was excluded from his statistics. Of sixty-one vaccinated children under 1 year of age and living in an environment comparatively free from tubercle bacilli, nodules and hilum shadows were noted in only a few after one year. After the third and fourth years no hilum shadows and only in rare instances nodules were seen. In forty-one nonvaccinated children living under identical conditions, the roentgenograms showed involvements of greater or less severity, which decreased after the fourth year. Of thirty-six vaccinated children living in an environment of massive contagion, the distribution of those with nodular infiltrations and hilum shadows was equal during the first two years; in only four (with the exception of pathologic cases) were there several calcified nodules. After the third year hilum shadows were more frequent than nodules. In fifty-eight nonvaccinated children, involvements of greater or less severity were noted. Primary exudation was seen in 12 per cent of these. In thirty-two vaccinated children living in a healthful environment no hilum shadows and only small nodules were seen after the first year. After the second and third years a few were seen with hilum shadows, but after the fourth year only nodules were noted. In twenty-five nonvaccinated children without a known source of infection, roentgenography disclosed symptoms resembling those in children exposed to massive contagion. As a result of his observations Sayé concludes that vaccinated children exposed to considerable infection present a milder reaction than do children not vaccinated and living in an identical environment. In persons vaccinated against tuberculosis the infection is confined to reactions in the lymphatic system.

Policlinico, Rome

36: 541-600 (Nov. 1) 1929. Medical Section

*Epidemic Parotitis; Attempts to Reproduce the Disease Experimentally in Animals: Researches on Salivary Secretion. F. Rocchi.—p. 541.
*Nervous Complications of Chickenpox. F. Fasella.—p. 566.
Nervous Complication Following Smallpox Vaccination. M. Faberi.—p. 582.
Antidiphtheritic Nasal Vaccination. U. Ferri.—p. 592.

Epidemic Parotitis: Attempts to Reproduce the Disease Experimentally in Animals and Researches on Salivary Secretion.—Rocchi reports that repeated attempts to transmit epidemic parotitis by inoculating into the testis of rabbits fluid from a human testis affected with the characteristic lesion resulted negatively. Likewise, the inoculation into the peritoneum of guinea-pigs of blood taken from patients with parotitis at the height of the disease was negative. Catheterization applied to the parotid duct with a special type of sound, in thirty cases of epidemic parotitis in adults and various controls, comprising more than 250 tests, revealed that the parotid secretion in epidemic parotitis was profoundly altered. In the majority of cases, the alteration consisted in the abolition of the secretion itself. In a small percentage of cases there was only a more or less marked diminution of the secretion. The type of the secretion in the individual cases (whether diminution or absence) is not influenced by stimulation by means of pharmacodynamic secretogogues, whether mild or potent.

Nervous Complications of Chickenpox.—Fasella reports a case of polyneuritis developing after chickenpox. A boy, aged 6, with a negative personal and family history, six days after the onset of a moderate eruption of chickenpox, when the disease had practically subsided and the fever had ceased, was seized with fever and severe pains in the lower limbs. A complete paralysis of the lower limbs developed. There was a disappearance of the patellar and achilles reflexes, and severe pain in the nerve trunks of the sciatic and femoral nerves. The symptoms disappeared to a certain extent after two days but the same manifestations developed in the upper limbs. The

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manifestations subsided rapidly, and, at the end of a week, had disappeared without leaving any traces. The author attributed the symptoms to the action of the chickenpox virus.

36: 1619-1662 (Nov. 11) 1929. Practical Section

*D'Amato Hemoclastic Test in Experimental Infections from Brucella Melitensis and from Brucella Abortus. G. Bossa.—p. 1619.
*Syndrome of Intestinal Pseudo-Occlusion Due to Large Uronephrosis in a Single Kidney. A. Vitale.—p. 1625.
*Tuberculization in Children. G. Notarangeli.—p. 1627.

D'Amato Hemoclastic Test in Experimental Infections from Brucella Melitensis and from Brucella Abortus.—Bossa reports that in animals sensitized to *Brucella abortus* the injection of a suitable dose of abortus vaccine produces a hemoclastic reaction identical with that described by D'Amato in typhoid infection and in infection with *Brucella melitensis*. The dose of vaccine to employ lies between 10 million and 50 million organisms per kilogram of body weight of the animal, smaller doses being ineffective, and stronger doses being likely to produce a nonspecific leukopenia. The hemoclastic reaction obtained in animals sensitized to *Brucella abortus* with injections of suitable doses of homologous vaccine is a specific phenomenon, since it is not produced in normal animals by the same dose of the same vaccine, and since, furthermore, in sensitized animals it cannot be produced by injections of typhoid vaccine or paratyphoid vaccine, or with injections of moderate doses of protein preparations.

Intestinal Pseudo-Occlusion Due to Large Uronephrosis in a Single Kidney.—Vitale reports a case of hydronephrosis in one kidney (the other kidney was aplastic) in which the tumor almost filled the entire right side of the abdomen. There were no signs of inflammation but there were symptoms of intestinal occlusion, toward which the diagnosis tended.

Tuberculization in Children.—In his researches on 204 children in rural schools, Notarangeli obtained 20 per cent of positive reactions with the Pirquet skin test and 23 per cent of positive reactions with the Trambusti intradermoreaction.

Archivos de Cardiología y Hematología, Madrid

10: 353-412 (Oct.) 1929

*Leukocytic Variations in New-Born Infants After Calmette's Vaccination. G. Pittaluga and F. Garcia.—p. 353.
Surgery of Organs of Hematopoietic System. R. D. Sarasola.—p. 384.

Leukocytic Variations in New-Born Infants After Calmette's Vaccination.—Pittaluga and García made a hematologic study of the variations of the leukocytic formula in 120 new-born infants, aged from 3 to 12 days, in 110 just before and during the period of B C G vaccination, and in ten, who did not receive vaccination, as a control. Blood for analysis was taken in all cases at the same time and under similar conditions. In the groups of vaccinated infants, from three to eight analyses were made, the last four or five being made at fifteen day intervals. The entire period of observation lasted for about three months. In the control group only two analyses were made, at an interval of from three to six days, during the first fortnight of life. A dose of B C G vaccine diluted in a teaspoonful of mother's milk was given to the infant every other day for six days. In 22 per cent of their patients the authors observed a spontaneous monocytosis, which was present before the administration of B C G vaccine and was independent of it. It rose to 20 or more monocytes per hundred leukocytes between the fifth and twelfth days of life. In this group, after vaccination, the monocytosis temporarily diminished and then increased again. The authors consider this change an inversion of the normal monocytic reaction after vaccination. In all the other cases an early monocytosis appeared after vaccination. The monocytic reaction was unquestionable in the authors' case. A monocytosis of 15.5 per cent was observed between the two first weeks after vaccination, whereas in the blood of the infants before vaccination, as well as in the blood of infants of the control group, the monocytes remained between 6 and 9 per cent. These variations correspond to those reported in the American literature, in which the importance of the monocytic reaction in tuberculosis has been emphasized. The authors conclude that the oral administration of B C G vaccine caused in their cases a general reaction characterized by early and marked monocytosis followed by lymphocytosis of long duration, diminution of the neutrophil granulocytes and deviation to the left of the number of nuclear lobes (Arneth). These leukocytic alterations represent a cellular reaction of defense of the organism, after vaccination, against the vaccine virus. This reaction is of the same type as the local and hematic reaction characteristic of primary tuberculosis, though in the case of vaccination it has a more rapid evolution as it is observed in the cycle of leukocytic modifications of the blood.

Archivos Latino-Am. de Pediatría, Buenos Aires

23: 669-736 (Sept.) 1929. Partial Index

*Pylorospasm: Cure of Persistent Vomiting in Infant by Mercurial Treatment. A. Casaubón, J. R. Delucchi and A. Moreno.—p. 669.
*Acute Anterior Poliomyelitis Associated with Cephaloplegia: Five Cases. E. Guggeri.—p. 708.

Pylorospasm: Cure of Persistent Vomiting in Infant by Mercurial Treatment.—Casaubón et al. report the case of an infant, aged 38 days, who presented all the symptoms of congenital hypertrophic stenosis of the pylorus with the exception of pyloric tumor. The condition was demonstrated to be pylorospasm. A change from mother's milk to artificial feeding (the mother had a weakly positive Wassermann reaction) and the institution of mercurial treatment, which consisted in the administration of minimal doses of mercury at first by mouth and then by inunction, led to complete recovery. The authors believe that this case shows that the lapse of four hours, which had been previously suggested as a standard to establish the differential diagnosis between congenital hypertrophic stenosis of the pylorus and pylorospasm, is insufficient. This case also suggests the advisability of a careful search for congenital syphilis as a possible etiologic factor in some types of persistent vomiting.

Acute Anterior Poliomyelitis Associated with Cephaloplegia: Five Cases.—In the last epidemics in Argentina, Guggeri treated six patients. Two presented a syndrome of association of either cephaloplegia or cephaloparesis with paralysis elsewhere. In all the patients, aged from 11 months to 2 years, respectively, paraplegia was the symptom that lasted the longest and did not respond to treatment. Although untreated the cephaloplegia disappeared in from two to twelve days after the onset of the disease, and the paresis (brachial or abdominal) in from six to twelve days. The patients of the last epidemic exhibited pulmonary disturbances, in some cases either with apyrexia or with slight fever, or with crises of suffocation and cyanosis which were never fatal. These phenomena were considered to be bronchial paresis. Tincture of nux vomica gave good results in this condition.

Siglo Médico, Madrid

84: 445-468 (v. 2) 1929

Extrapyramidal Epilepsy: Two Cases. J. M. de Villaverde.—p. 445.
Pulmonary Pseudotuberculosis: Differential Diagnosis. E. Hervada.—p. 449.
*So-Called Closed Cavity Method in Treatment of Infections with Purulent Secretions. L. Gret.—p. 457.

So-Called Closed Cavity Method in Treatment of Infections with Purulent Secretions.—Gret has obtained good results in the treatment of purulent infections by the use of the so-called closed cavity method advocated by Méndez. The focus of infection should be kept closed to keep the germs of the infection in constant contact, as long as possible, with the pus laden with antibodies. The author emphasizes the importance of not allowing the antibodies produced in the organism to be removed before they have accomplished their biologic task, which is to cause the gradual loss of virulence of the infective germs, disinfection of the focus and the return of the tissues to normal. In principle the method is limited to the patient's immunization, permitting only small evacuations of the excess of inflammatory exudate. Drainage of abscesses or free evacuation of purulent secretions harms the organism of the sick person both by depriving him of the specific means of defense and by exhausting his strength. The treatment is varied according to the seat of the infection. Infections may develop in original closed cavities (abscesses and effusions in serous membranes), in open cavities that may be regarded as closed cavities because of their function (bronchitis, metritis and otitis) and in actual open cavities (conjunctivitis, urethritis, burns and ulcers).

84: 497-520 (Nov. 16) 1929

Roentgen Treatment of Cancer. J. Ratera.—p. 497.
*Comparative Value of Cultures in Hohn's Medium and Inoculation into Guinea-Pigs to Demonstrate Presence of Tubercle Bacilli in Sputum. J. Codina Suqué.—p. 505.

Comparative Value of Cultures in Hohn's Medium and Inoculation into Guinea-Pigs to Demonstrate Presence of Tubercle Bacilli in Sputum.—Codina Suqué made experiments to compare the value of cultures of sputum made according to Hohn's method (10 per cent solution of sulphuric acid, twenty minutes of contact, without incubation) with inoculation of sputum into guinea-pigs after treatment either with salt solution or with Hohn's medium. The author concludes that the concentration of the sulphuric acid used in Hohn's method is so great that it attacks the bacilli. For this reason, inoculations into guinea-pigs gave positive results in many cases, whereas cultures made by Hohn's method were negative. In sputum with few bacteria or in cases in which only a small quantity of sputum is available, a concentration of 5 per cent or even of 2.5 per cent is sufficient. When the acid is used in lesser concentrations, adapted to each particular case, and at the same time the medium is modified to make it more suitable for the development of the bacilli (tubes with hematin), the cultures may yield as good results as inoculation, with the advantage of being a more rapid and more economical method. Hohn's method may be appropriate only to demonstrate the classic forms of tubercle bacilli since the acid resistance due to the waxy capsule is the reason that the acid (which is the basis of the method) does not attack the bacilli.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

88: 673-853 (Nov. 25) 1929

"Lecithinoid" Decomposition Product in Sympathetic Nervous System. S. Kõrnyey.—p. 673.
Displacement of Purkinje Cells and Vasal Factors. Pfeiffer.—p. 686.
*Late Results of Epidemic Encephalitis in Children and Youths. W. Brand.—p. 698.
Mental and Social Conditions in Relation to Structure of Body. E. Zerbe.—p. 705.
Results of Experimental Lead Poisoning on Nervous System of Dogs. E. K. Ewserowa.—p. 752.
*Blood Vessels of Retina in Feebleminded Children. H. Gauss.—p. 776.

Late Results of Epidemic Encephalitis in Children and Youths.—Brand reports that in fifteen patients who were observed for a period of from five to nine years, a predominance of occurrence of Parkinson's syndrome was seen (in 86 per cent). Among these were also some who at first showed only mental disorders and in whom the amyostasia developed gradually. Two patients did not have the syndrome, but they were socially unfit because of serious moral and ethical defects. In all the patients a gradual increase in the severity of the condition was noted.

Blood Vessels of Retina in Feebleminded Children.—On the basis of a study of 122 feebleminded children between the ages of 5 and 15 (sixty-nine boys and fifty-three girls), Gauss reports that he could not find a fundamental difference in the course of the blood vessels in these as compared to a normal group. The variations of 25 per cent in feebleminded children and of 30 per cent in normal children are within physiologic limits and Jaensch's statements cannot be given support. However, eye disorders such as pseudoneuritis, strabismus, malformations (displacement of the pupils and coloboma of the choroid) and loss of color of the pupil were observed as frequently as by other authors.

Deutsche medizinische Wochenschrift, Berlin

55: 1913-1952 (Nov. 15) 1929

Pathology of Arteriosclerosis: Its Differentiation from Similar Diseases. W. Ceelen.—p. 1913.
Value of Psychiatric Examination and Evaluation of Great Historical Personalities. A. Heidenhain.—p. 1915. C'cn.
*Treatment of Tuberculosis of Lungs and of Other Organs with Salt-Free Diet. G. Apitz.—p. 1918.
*Bilateral Phrenic Exeresis in Pulmonary Tuberculosis. L. Dünner.—p. 1918.
*Aschheim-Zondek's Pregnancy Reaction: Its Significance in Differential Diagnosis of Amenorrhea and Menopausal Disturbances. E. Solms and E. Klopstock.—p. 1919.
Mechanical Devices for Aid in Confinement. F. Lichtenstein.—p. 1920. C'cn.
*Development of Masculine Characteristics as Result of Ovarian Tumor: Their Disappearance After Removal of Tumor. E. Strassmann.—p. 1922.
Rickets During Summer Months. Schönen.—p. 1924.
Erythrodermia During Early Infancy. C. Hirsch.—p. 1924.
Unrecognized Roentgen Injuries. P. Krause.—p. 1926.
Observations in Diagnosis of Tuberculosis: Belated Diagnosis and Treatment Among Uninsured Population. O. Steinmeyer.—p. 1927.
Harmful Effects Resulting from Vaccination with Tetanus Antitoxin. A. Götz.—p. 1928.
Remission of Encephalomyelitis After Measles. R. Härthle.—p. 1928.

Treatment of Tuberculosis of Lungs and of Other Organs with Salt-Free Diet.—Apitz employed a salt-free diet in the treatment of fifty-three children with various forms of tuberculosis. In the beginning, all patients showed an increase in weight. Tuberculosis of the skin was influenced favorably, but the diet had no effect on the pulmonary processes. The author states that for the therapy of tuberculosis of the lungs dietary treatment should be abandoned, because it is without effect. It is also pointed out that the sensational publicity which was given to this treatment has been harmful as many patients with progressive pulmonary tuberculosis are overconfident in its effectiveness and refuse any other treatment.

Bilateral Phrenic Exeresis in Pulmonary Tuberculosis.—For the treatment of patients with tuberculosis of both lungs, Dünner advocates bilateral phrenic exeresis only in cases in which bilateral pneumothorax cannot be induced. In some cases phrenic exeresis has been employed with success, whereas in other instances harmful effects have resulted. In order to prevent complications, exeresis of the nerve on both sides should not be attempted in patients in whom the thorax is rigid, because in such cases breathing would be difficult. After exeresis is done on one side the position of the diaphragm should be determined; if it stands abnormally high it is better to omit the exeresis on the other side.

Aschheim-Zondek's Pregnancy Reaction: Its Significance in Differential Diagnosis of Amenorrhea and Menopausal Disturbances.—Solms and Klopstock state that Aschheim-Zondek's pregnancy test was employed in 349 cases. They assert that the results were correct in more than 99 per cent of the cases. Further experimentation with Aschheim-Zondek's method convinced the authors that it is of diagnostic and therapeutic value in cases of amenorrhea and in menopausal disturbances. It has been proved that these conditions are caused either by hyperfunctioning or by hypofunctioning of the endocrine sex glands. The changes in the test animals reveal which of the two conditions is the etiologic factor in each instance. In cases of hypofunctioning the therapy then supplies the missing hormones, whereas in cases of hyperfunctioning preparations that have an antagonistic effect on the hormonal secretions are administered. The authors describe four cases that show the value of this method.

Development of Masculine Characteristics as Result of Ovarian Tumor.—Strassmann reports the case of a woman, aged 24. She was sent to the hospital because a pregnancy had been diagnosed but had not advanced normally. Consequently it was assumed that the fetus had died. The diagnosis of pregnancy was understandable because menstruation had ceased more than a year previously and the right ovary had developed into a large tumor about the size of a child's head. The woman showed no other signs of pregnancy. She had noticed, however, the development of certain masculine characteristics. Hirsutism was so marked that shaving became necessary. The features became sharp and angular, the breasts decreased in size, the subcutaneous layer of fat became atrophied, and the voice became much deeper. However, the external genitalia did not show changes and libido was increased rather than decreased. Following the detection of the tumor, an operation was performed. The growth and the right ovary were removed. The recovery was without complications. Four weeks later menstruation set in again and thereafter it recurred regularly every twenty-four days. All the masculine characteristics with the exception of the deep voice disappeared. The examination of the tumor revealed two kinds of tissues. The structure of some of the cells resembled the structure of the interstitial cells of the testis. The author points out that in the literature there are reports of two similar cases in which the presence of tumors changed certain sexual characteristics

of the patients. The pathogenesis of such tumors is as yet not entirely clear. However, in the case reported the structure of the growth indicates that testicular embryonal rests may have been of some influence.

Klinische Wochenschrift, Berlin

8: 2169-2216 (Nov. 19) 1929

Heart and Peripheral Circulation. E. Magnus-Alsleben.—p. 2169.
Foundations of Theory Concerning Specificity and Resonance of Stimulation of Nerves (Resonance Theory). P. Weiss.—p. 2174.
*Failure of Liver Therapy in Nervous Manifestations of Pernicious Anemia. F. Krause.—p. 2177.
*Chemical Researches on Skin Tissues in Experimental Roentgen Intoxication. E. Urbach and H. Schnitzler.—p. 2179.
Correlation Between Blood Group and Anthropologic Characteristics. T. Wohlfeil and F. Isbruch.—p. 2184.
Glutathione Content of Trained Muscles. H. Habs.—p. 2187.
Pathogenesis of Jaundice: No Jaundice Without Disturbance of Liver. Y. Ohno.—p. 2188.
Method for Determination of Specific Gravity of Living Human Body (Anthropopyknometry). H. Pfleiderer.—p. 2191.
Spirochete Content of Cornea Following Subscrotal Inoculation of Spirochaeta Pallida. S. Ino.—p. 2193.
Respiration in Plasma of Virus Diseases. L. Schönthal and E. I. Irvine-Jones.—p. 2194.
Diaphragmatic Pleurisy a Disease Entity. L. Hollaender.—p. 2194.

Failure of Liver Therapy in Nervous Manifestations of Pernicious Anemia.—Krause describes four cases of pernicious anemia in which as a result of liver treatment the condition of the blood improved. However, the spinal cord complication progressed and in some instances it was the cause of the fatal outcome.

Chemical Researches on Skin Tissues in Experimental Roentgen Intoxication.—Urbach and Schnitzler investigated the pathogenesis of roentgen intoxication in experiments on animals. Chemical tests of the blood and of the skin tissues proved that this condition was a protein injury. It could be demonstrated that after intensive roentgen irradiation the total nitrogen and especially the residual nitrogen were increased. The increase in the total nitrogen content of the blood was about 10 per cent, whereas in the skin tissues it ranged from 20 to 30 per cent. The residual nitrogen was increased up to 300 per cent. That the poisoning is generalized is proved by the fact that the chemical changes in the tissues that have not been exposed are the same as in the irradiated tissues. It was found also that although the nitrogen content was increased, the chlorine content was reduced. This disproves the theories of other authors who assumed that in roentgen intoxication the tissues retain sodium chloride. Urbach and Schnitzler maintain that the disintegration of protein is the main factor in this form of poisoning and it may be recognized by the increased quantities of nitrogen, especially of residual nitrogen. They assume that as favorable results were attained with sodium chloride, this substance provides a certain protection for the protein.

Medizinische Klinik, Berlin

25: 1765-1804 (Nov. 15) 1929

Causes of Habitual Abortion and Premature Birth. M. Henkel.—p. 1765.
*Nervous Disturbances in Pernicious Anemia and Liver Therapy. H. Curschmann.—p. 1767.
Sources of Infection in Various Forms of Fungoid Dermatitis. C. Bruhns, A. Alexander and E. Kadisch.—p. 1769.
Cardiotonic, Diuretic and Dietetic Treatment in Heart Diseases. N. Jagić and R. Klima.—p. 1773.
Cardiolysis: Technic and Results. H. Schloffer.—p. 1777.
False Pregnancy. F. Heimann.—p. 1779.
Treatment in Anosmia. Schönfeld.—p. 1780.
Immunity in Experimental Syphilis. F. Breinl.—p. 1780.
Etiology, Symptomatology and Treatment in Various Diseases of Cornea. K. Vogelsang.—p. 1781. C'td.
Treatment in Abscesses of Sweat Glands. Hayward.—p. 1783. C'td.

Nervous Disturbances in Pernicious Anemia and Liver Therapy.—Curschmann directs attention to the fact that although liver treatment improves the condition of the blood in pernicious anemia, it has no therapeutic effect on the nervous disturbances, especially on the myelitis. His observations convinced him that the spinal symptoms will require a special treatment. He thinks that this will be difficult because other therapeutic measures such as arsenic treatment or blood transfusion have likewise failed to affect the nervous symptoms. The author thinks that perhaps fever therapy might prove helpful. However, it should be attempted only after the condition of the blood has been improved by liver therapy. Because liver treatment fails to influence the spinal symptoms and also the achylia, investigations should be made to find not only the underlying cause of all the symptoms of pernicious anemia but also a real causal therapy.

Münchener medizinische Wochenschrift, Munich

76: 1909-1950 (Nov. 15) 1929

Ephedrine for Combating Postoperative Collapse. E. Melzner.—p. 1909.
*Plantar Pain as Early Symptom in Beginning Thrombosis of Lower Extremity. K. Denecke.—p. 1912.
*Relation Between Scarlet Fever and Streptococcus Sore Throat. I. L. Riskin.—p. 1913.
Utilization of Foods After Total Extirpation of Stomach. G. Breitenbach.—p. 1920.
Treatment in Vasoneurotic Pains, Neuralgia and Myalgia. W. Hartoch.—p. 1921.
*Cause and Treatment of Periodic Paralysis of Extremities. K. Yoshimura.—p. 1921.
Experiences with Heteroplastic Implantation of Tissues. E. Herzberg and E. Guttmann.—p. 1922.
Preventive Ligature in Isolated Suture of Levator in Operative Treatment of Prolapse. G. Braun.—p. 1924.
Clinical Aspects in Brucella Abortus Infections. R. Weidner.—p. 1925.
Therapeutic Effects in Peroral Administration of Insulin. W. Fornet.—p. 1926.

Plantar Pain as Early Symptom in Beginning Thrombosis of Lower Extremity.—According to Denecke it has been observed that patients who develop thrombosis of the lower extremity notice on the day before a piercing pain on the plantar surface. In order to determine whether this pain is an early symptom of a beginning thrombosis the author studied the pathologic conditions in the bodies of persons who had had thrombosis of the lower extremity, and he also inquired from surgical clinics whether the plantar pain had been observed in patients before the development of thrombosis. Postmortem examinations in seven cases of thrombosis of the lower extremity proved that in all of them the plantar veins were affected. In describing his observations the author explains the mechanism of this symptom. Inquiries sent to clinics were answered to the effect that the plantar pain had been noticed in rare instances. However, the sensitiveness to pressure on the plantar surface had not been tested. The author thinks that if, after observations on a greater clinical material, this sign actually proves to be an early symptom of thrombosis of the lower extremity, it might be possible, in many instances, to prevent or at least check the progress of the thrombosis by proper preventive measures, such as elevation of the leg and massage.

Relation Between Scarlet Fever and Streptococcus Sore Throat.—Riskin asserts that it is now almost generally accepted that a streptococcus is the pathogenic micro-organism of scarlet fever. He also points out that scarlet fever is not only generally accompanied by sore throat but, in some instances in which the exanthem does not develop, it shows almost the same aspects as streptococcus sore throat. Therefore, the author investigated the correlation between scarlet fever and septic sore throat during a scarlet fever epidemic. Two hundred and twenty-two nurses who came in contact with scarlet fever patients were kept under observation. Eighty-seven of them contracted sore throat; twenty-two had had it shortly before. The length of the incubation period in streptococcus tonsillitis was about the same as in scarlet fever. It could not be definitely determined how many scarlet fever patients had been in contact with persons suffering from sore throat before they contracted scarlet fever. However, there was a considerable number of cases. In classifying the various types of streptococcus tonsillitis it was found that catarrhal and lacunar forms were most frequent. Follicular tonsillitis occurred only once. Sore throat was frequently contracted by persons who in former years had had scarlet fever. Blood tests of patients with sore throat showed a slight increase in the number of leukocytes and a deviation to the left. The Dick test was performed on ninety-one nurses. It was observed that patients with a negative reaction may still contract streptococcus sore throat. Concerning the frequency and the nature of the complications in streptococcus sore throat, the author states that of eighty-seven patients seven developed catarrhal or suppurative otitis. Bacterial cultures were made from pharyngeal smears in the majority of persons who came in contact with

the scarlet fever patients. Hemolytic streptococci were found in some of the persons who had sore throat, but also in some who did not contract it.

Cause and Treatment of Periodic Paralysis of Extremities.—Yoshimura observed that this disease often was concurrent with diabetes or with glycosuria and also that it often followed the intake of large quantities of carbohydrates. Examination of blood withdrawn during an attack of paralysis showed that the magnesium content was far in excess of the calcium content. It is known that magnesium has a paralyzing influence on the neuromuscular apparatus. In experiments on animals the author observed that either the administration of large quantities of magnesium or the intravenous injection of dextrose led to a typical paralysis of the extremities. In a patient to whom dextrose was administered during an attack of paralysis of the extremities, the paralytic symptoms became more severe. After an injection of calcium, however, the paralysis subsided. On the basis of these observations the author concludes that the etiologic factor in periodic paralysis of the extremities is a shifting in the calcium-magnesium equilibrium of the blood serum. The increased magnesium content causes paralysis of the neuromuscular apparatus. The administration of calcium counteracts this condition.

Strahlentherapie, Berlin

34: 1-222 (Oct. 23) 1929

*Light Treatment in Tuberculosis of Skin. A. Reyn.—p. 13.
Light Treatment in Rhinolaryngologic Lupus Vulgaris. O. Strandberg.—p. 32.
Light Treatment in Skin Diseases. H. Haxthausen.—p. 40.
Measurement of Radiation Intensity of Carbon Arc. V. Thorsen.—p. 46.
*Heliotherapy in So-Called Surgical Tuberculosis. A. Rollier.—p. 55.
*Heliotherapy in Tuberculous Peritonitis. O. Bernhard.—p. 77.
Sensitivity of Animal Organism to Light. W. Hausmann.—p. 87.
Effect of Light on Functioning of Auditory and Olfactory Organs. L. Freund.—p. 110.
Measurement of Biologically Active Rays in Sunlight. L. Hill.—p. 117.
Ultraviolet Ray Dosimetry. P. Keller.—p. 129.
Intensity of Radiation in Carbon Arc Light. G. Goldhaber.—p. 143.
Unspecific Changes in Skin Following Quartz Lamp Irradiation. H. O. Röhr.—p. 157.
Action of Infra-Red Rays on Eye. W. Hoffmann.—p. 190.
Prophylactic Action of Ultraviolet Rays in Rickets. K. Huldschinsky.—p. 197.
*Ultraviolet Irradiation in Erysipelas in Nurslings. J. Becker.—p. 205.
Superiority of Finsen Treatment of Lupus Vulgaris. F. Thedering.—p. 209.
Optic Changes in Irradiated Proteins. M. Spiegel-Adolf.—p. 220.

Combined Local and Universal Light Treatment in Tuberculosis of Skin.—Reyn states that at the Finsen Institute in Copenhagen all forms of tuberculosis of the skin are now treated by combined local and universal irradiation. Less time is required, the results are better and recurrences are rarer with this form of treatment than with local light treatment alone.

Heliotherapy in So-Called Surgical Tuberculosis.—Rollier discusses the therapeutic, prophylactic and social significance of heliotherapy in so-called surgical tuberculosis but states in his opening sentence that the subject is so many-sided and complicated that it is not abstractable.

Heliotherapy in Tuberculous Peritonitis.—During the past twenty-seven years Bernhard has treated 103 persons with tuberculous peritonitis by means of sunlight. In the cases of serous peritonitis the mortality was 1.5 per cent, in chronic productive peritonitis 0 per cent and in suppurative ulcerative peritonitis 25 per cent. The mortality in all the cases of tuberculous peritonitis, irrespective of their type, was 5 per cent.

Ultraviolet Irradiation in Erysipelas in Nurslings.—Becker calls attention to the fact that the mortality in erysipelas is inversely proportional to the age of the patient and heretofore has been extremely high in nurslings. In eight infants (aged 18 days, 20 days, 3 weeks, 6 weeks, 10 weeks, 6½ months, 9 months and 12 months) with erysipelas treated by means of ultraviolet irradiation with one and one-half times the individual erythema dose only one death occurred and that was in an infant (aged 20 days) in whom erysipelas developed following an operation for umbilical hernia and who died from septic thrombosis, peritonitis and bronchopneumonia. In some of the patients who recovered the erysipelas was of the most malignant form.

Wiener klinische Wochenschrift, Vienna

42: 1493-1524 (Nov. 21) 1929

*Experimental Foundations of Theories Concerning Therapeutic Action of Liver. K. Singer.—p. 1493.
Paradoxic Leukocytic Phenomena Following Action of Gases and Vapors in Gastro-Intestinal Tract. K. Rudsit.—p. 1497.
*Hysteria in Epilepsy. S. Frankl.—p. 1499.
*Unusual Case of Cerebral Syphilis in a Girl Aged Nine. G. Papp.—p. 1503.
Favorable Effects of Parathyroid Preparations. A. Sucher.—p. 1504.
*Pains in Feet: Causes and Treatment. G. Engelmann.—p. 1505.
Causes and Treatment of Seborrheal Alopecia. R. O. Stein.—p. 1510.
Causes and Treatment of Coccygodynia. F. Mandl.—p. 1512.

Experimental Foundations of Theories Concerning Therapeutic Action of Liver.—Singer discusses three theories concerning the therapeutic action of liver. According to the first theory a liver diet stimulates the erythropoietic system. The author reports the results of tests with fresh liver, with liver extracts and with fresh meat. It was found that although fresh liver, as well as extracts, influences the condition of the blood in pernicious anemia, in secondary anemia only fresh liver has a therapeutic influence. From these observations the author concludes that a liver diet influences pernicious anemia in a different manner than it does secondary anemia. Liver stimulates the bone marrow, but in pernicious anemia a liver diet does not act in this manner. According to the second theory a liver diet reduces the action of the hemolytic apparatus, which is enormously increased during pernicious anemia. The results of experiments proved that a liver diet reduces the hemolysis but this reduction is probably not caused by a direct action on the erythrolytic apparatus. The third theory concerning the mode of action of a liver diet is based on the assumption that in pernicious anemia the production of erythrocytes is qualitatively changed. The corpuscles that are formed are biologically inferior and disintegrate sooner than normal erythrocytes. A liver diet provides elements necessary for the building up of erythrocytes that are effective for a sufficient length of time. The author concludes that the experimental investigation of the therapeutic action of liver has proved that the following substances are involved: (1) a nonspecific substance contained in fresh liver and in meat but not in liver extracts which influences hematopoiesis and hemolysis, and (2) a specific substance also found in liver extracts which influences the production of erythrocytes so that the qualitatively inferior, short-lived erythrocytes, characteristic of pernicious anemia, are supplanted by biologically strong erythrocytes, which have a normal length of life.

Hysteria in Epilepsy.—Frankl shows that hysteria and epilepsy sometimes occur together. He asserts that epileptic persons have a predisposition to hysteria and often become hysterical. Epileptic attacks frequently are prolonged by hysteria. The observation of somatic and psychologic conditions and a careful anamnesis will aid in a correct diagnosis.

Unusual Case of Cerebral Syphilis in a Girl Aged Nine.—Papp reports the case of a girl, aged 9, who suffered from hemiplegia and aphasia. The child had been apparently healthy until the day before she was brought to the hospital. Then she had complained of feeling weak and tired. After she had slept for several hours, she could not speak any more and she also showed signs of a beginning paralysis. Because the symptoms became more severe, the child was sent to a hospital. The author gives a detailed report of the results of the examination. He states that the Wassermann reaction of the blood and of the cerebrospinal fluid was strongly positive. Under the influence of antisyphilitic treatment the paralysis gradually decreased. Because the patient contracted diphtheria, the antisyphilitic cure was interrupted but later it was resumed. However, the Wassermann reaction remained positive. It could not be definitely determined whether this was a case of congenital or of acquired syphilis. Most of the characteristic signs of congenital syphilis were absent and the mentality of the girl was normal. After the birth of the child such symptoms as vesicles, sores and eczema had not been noticed. The mother had had no abortions and another child, who was three years older than the patient, was entirely healthy. This child as well as the father gave negative Wassermann reactions, whereas the reaction in the mother was strongly positive. The author thinks that by means of a prolonged treatment it might

be possible to counteract the syphilis. However, he questions whether the spastic hemiplegia will ever completely disappear.

Pains in Feet: Causes and Treatment. — Engelmann maintains that faulty footwear is the main cause of pains in the feet. He criticizes various types of shoes and then shows how pains and deformities may be avoided by wearing properly built shoes. He also evaluates measures used for treating flat feet.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

73: 5217-5324 (Nov. 9) 1929

Aids in Diagnosis of Epilepsy During Consultation Hours. C. T. van Valkenburg.—p. 5219.
*Treatment of Postvaccinal Encephalitis. J. Hekman.—p. 5227.
*Practical Importance of Negative Tuberculin Reaction. H. Vos.—p. 5231.
*Müller's Simplified Test for Syphilis. C. Goedhart.—p. 5246.
Are the Back Pains Following Revaccination Neuralgic Pains? A. H. A. Martens.—p. 5249.
Diagnostic Difficulties in Appendicitis. C. A. Cammaert.—p. 5251.

Treatment of Postvaccinal Encephalitis. — Hekman reports two further cases of postvaccinal encephalitis in two children, aged 2 and 4, respectively. When the child aged 2 was admitted to the hospital, seven days after being vaccinated with cowpox, it had spasms over the whole left side of the body. Both eyes were turned constantly to the right; also the head. During the attacks, the face was pale and cyanotic. The child was unconscious, and the pulse was rapid (about 140). On the left upper arm were three distinct pox pustules with considerable reaction in the vicinity. The evening of the day of admission, the patient received an intravenous injection of 10 cc. of blood serum from the mother, who had been vaccinated at the same time as the child. The following day the injection was repeated. The morning of that day the patient had still a few attacks, but toward noon they ceased. The child was, however, still unconscious, but the temperature began to fall, and in two days it had become normal. Twelve days later the patient was dismissed as cured. The other child, aged 4, received similar treatment but died, in spite of repeated injections of serum, soon after the temperature rose to 42.6 C. (108.5 F.).

Practical Importance of Negative Tuberculin Reaction. —Vos recommends that, as a rule, persons being treated in a tuberculosis sanatorium be dismissed if they no longer react to 10 mg. of tuberculin administered subcutaneously. There is less than a 10 per cent chance that tuberculosis still persists. On the other hand, there is more than a 90 per cent chance that the "patient" does not have tuberculosis, and in that case a longer stay in a sanatorium in the midst of many patients with open tuberculosis may entail grave dangers. Serious consequences for the 10 per cent who, though presenting a negative tuberculin reaction, may still be infected, may be averted by keeping them under control and subjecting them periodically to tuberculin tests. If they show suspicious manifestations, they can be placed under closer observation. The author cannot see how, if this method is pursued, any accidents can happen that might have been avoided by a longer stay in the sanatorium.

Müller's Simplified Test for Syphilis.—Goedhart states that one of the main drawbacks of the original method was the long time required. Müller has sought to change the method so that the whole duration of the test would be from two to three hours at the most. The new conglobation reagent is, in principle, the same as the old; it has undergone merely a slight change in concentration. The new antigen differs from the old in that the conglobation reagent is diluted with physiologic solution of sodium chloride and that the conglobation period is changed, being now only twelve minutes at room temperature. The results are, in general, much the same as with the Wassermann test. Müller asserts that he has observed no nonspecific reactions.

Acta Pædiatrica, Stockholm

9: 1-227 (Oct. 30) 1929

Quantitative Determination of Iron in Organic Substances. G. Svedenius.—p. 1.
Determination of Free Phosphates in Blood Serum. H. Magnusson and H. Sylvan.—p. 9.
*Blood Sugar in Intestinal Infantilism. E. Svensgaard.—p. 22.
Genuine Nephrosis in Children. C. de Lange.—p. 30.
Reexamination of Premature Infants. S. Ranke.—p. 46.
*Tuberculosis and Erythema Nodosum. N. Ringertz.—p. 54.
*Traumatic Tuberculosis of Skin. F. Wahlgren.—p. 68.
Prophylaxis of Measles in Persons Convalescing from Scarlet Fever and Diphtheria. A. Lichtenstein.—p. 77.
*Phosphorus Content of Blood from Umbilical Cord in Infants of Mothers Receiving Antirachitic Preparations. I. Jundell and H. Magnusson.—p. 81.
Chronic Aleukemic Myeloid Leukemia in Boy, Aged Eight Years. E. Esp.—p. 89.
*Malignant Hypernephroma with Virilism. G. Lundh.—p. 118.
Parathyroid Hemorrhage in Infant, Aged Three Months. A. Friedlander.—p. 129.
Staphylococcal Sepsis with Transition to Lymphatic Leukemia. I. Lundholm.—p. 137.

Blood Sugar in Intestinal Infantilism. — Svensgaard studied the blood sugar curve in two cases of intestinal infantilism after the administration of 1, 1.5 and 2 Gm. of dextrose per kilogram of body weight. The resulting blood sugar rise was found to be less pronounced in these patients than in normal persons. The changes were constant in several experiments on the same patient. The ingestion of starch in the form of wheat bread likewise produced only a slight increase in the blood sugar concentration. A "normal" curve was obtained in one patient after the ingestion of 4 Gm. of dextrose per kilogram of body weight. The blood sugar concentration following the administration of levulose and of epinephrine showed normal changes. The simultaneous administration of epinephrine and dextrose produced a marked and protracted rise in the blood sugar concentration. The author believes that the low blood sugar curves are caused by disturbances in the intermediate metabolism.

Tuberculosis and Erythema Nodosum.—Ringertz reports the occurrence of erythema nodosum in two patients with tuberculosis and advances these cases as evidence of an intimate relation between these two conditions.

Traumatic Tuberculosis of Skin.—Wahlgren reports the case of a boy, aged 8 years, in whom a cut on the foot was followed by primary tuberculosis of the adjacent skin. The clinical diagnosis was confirmed by a biopsy. Under Finsen treatment the lesion healed completely.

Phosphorus Content of Blood from Umbilical Cord in Infants of Mothers Receiving Antirachitic Preparations.—In examinations of blood from the umbilical cord in infants of twenty-eight mothers who had not been given cod liver oil before labor and of twenty-seven mothers who had received cod liver oil for a considerable time before labor, Jundell and Magnusson found that the average phosphorus content in the untreated cases was 4.62 mg. per hundred cubic centimeters of serum, whereas in the treated cases it was 5.39 mg. The authors state that although their observations prove that the ingestion of cod liver oil by a pregnant woman increases the phosphorus content of the blood in the fetal circulation, they do not prove that the small increase is of practical significance.

Malignant Hypernephroma with Virilism. — Lundh reports a case of malignant hypernephroma with virilism in a girl, aged 3½ years. The patient, who was so debilitated on entering the hospital that operative treatment was contraindicated, died shortly after in violent chronic spasm. On postmortem examination a tumor almost as large as a man's head was found in the place of the left suprarenal; the growth was sharply defined from the left kidney and other organs. Metastases were present in both lungs. Microscopic examination revealed a highly malignant tumor composed of typical hypernephroma cells.

Acta Psychiatrica et Neurologica, Copenhagen

4: 203-298, 1929

Case of Fibrous Meningioma (Psammoma) in Cerebellopontile Angle. G. H. Monrad-Krohn.—p. 203.
*Relation Between Arteriosclerosis and Manic-Depressive Insanity. T. Sondén.—p. 217.
*Treatment of Epilepsy by Fasting. H. I. Schou and C. Clemmesen.—p. 243.
Psychology of Unusual States of Mind. E. Stransky.—p. 261.
Syndrome of Nonercossed Naso-Ocular Reflex, Unilateral Goiter and Unilateral Exophthalmos of the Same Side. T. B. Wernoe.—p. 281.

Relation Between Arteriosclerosis and Manic-Depressive Insanity.—On the basis of a review of the literature and a study of necropsies on manic-depressive patients and those

without mental disorders who died between 1880 and 1928, Sondén makes the following report: Of 2,262 mentally normal patients who died, 1,282 were male and 980 female. One thousand three hundred and thirteen necropsies were performed on mentally deranged persons, 734 of whom were male and 579 female. The frequency of arteriosclerosis in men and in women is about equal. Before the thirtieth year it is rare, few cases being noted up to 39 years of age. However, after the fortieth year, it increases rapidly. There is seldom an individual between 60 and 69 without signs of arteriosclerosis. After 70, arteriosclerosis is rarely absent. Patients who died in a general hospital had arteriosclerosis in a greater proportion than those who died in an insane asylum. This is probably due to the fact that there is a predominance of such patients in the first named institutions. Manic-depressive patients with syphilis showed arteriosclerosis to a greater extent than others. Sondén does not see any variation with regard to the frequency of occurrence of arteriosclerosis between dementia praecox and manic-depressive insanity. He concludes, therefore, from his observations that the alleged connection between these two mental disorders has no empiric foundation.

Treatment of Epilepsy by Fasting.—Schou and Clemmesen obtained the following results after 100 periods of treatment in seventy-eight patients, twelve of whom had two and five three periods of treatment by starvation for from five to fourteen days: The frequency of epileptic seizures was considerably lessened during the first five days and even thereafter, in spite of the reduction in the amount of drugs. One patient, who had been suffering from epilepsy for one year, was relieved from seizures for four and one-half years. The authors advise this treatment in severe cases of epilepsy with daily seizures, especially when status epilepticus is imminent. They further point to the importance of studying the basal metabolism, carbohydrate metabolism, acidity and acetone content of the blood and urine during fasting.

Acta Radiologica, Stockholm

10: 313-420 (Oct. 31) 1929

Radium Department of St. Bartholomew's Hospital, London. F. L. Hopwood.—p. 313.
Biologic Effects of Radium Irradiation. R. G. Canti.—p. 320.
Therapeutic Uses of Radium Applied Externally. N. S. Finzi.—p. 332.
*Radium Treatment of Carcinoma of Rectum. C. Gordon-Watson.—p. 345.
Radium Treatment of Malignant Disease of Upper Air Passages. D. Harmer and B. Russell.—p. 362.
Radiologic Work in Gynecologic Department, St. Bartholomew's Hospital. J. D. Barris and M. Donaldson.—p. 379.
*Treatment of Primary Carcinoma of Breast with Radium. G. Keynes.—p. 393.
Technic of Radium Treatment of Carcinoma of Tongue and Mouth. G. E. Gask and E. D. Moir.—p. 403.
Roentgen Rays in Treatment of Malignant Disease. N. S. Finzi and W. M. Levitt.—p. 409.

Radium Treatment of Carcinoma of Rectum.—Gordon-Watson concludes that radium should be used chiefly for inoperable and borderline cases, and then only in conjunction with surgery. Neumann's method of irradiation with needles after exposure of the growth from the perineum is described in detail. Other methods are considered more briefly; namely, intra-abdominal, intrarectal, through the vagina, through the skin of the perineum, surface radiation on Columbia wax, and irradiation with a bomb at a distance. The author has in a few cases used irradiation as a preliminary to excision, but the method is still under trial. Some patients have also been treated for recurrences after operation. In all, sixty-five patients have been treated in four and one-half years, and the results have been, on the whole, encouraging. The author is satisfied that great alleviation can be obtained in advanced cases, though he does not at present prefer radium treatment when the growth can be removed by operation.

Treatment of Primary Carcinoma of Breast with Radium.—Keynes regards treatment of primary carcinoma of the breast with radium needles as preferable to operation. In all, ninety patients have been treated from August, 1924, to April, 1929, many of these having operable tumors. The dosage employed is relatively small (up to 100 mg.), and the time of exposure long (seven days or more). The radium is distributed in two main areas: (1) the primary growth and (2) the lymphatic drainage, including the pectoral area, the axilla, and the infraclavicular, supraclavicular and intercostal spaces. The needles are inserted through small stab wounds under gas and oxygen anesthesia. The effect on the primary growth is usually complete after four months; if it has not completely disappeared after this time, further treatment, operation or radiologic, may have to be considered. No extensive operation is ever needed. Usually no operation is performed. Enlarged lymph glands respond well to radium and usually disappear. A histologic proof of the nature of the growth was obtained in the first fifty cases, but no specimen is now taken as it has been found that cutting into the tumor sometimes results in the appearance of an implantation growth. Some histologic evidence of the effect of radium on the tumors has been obtained. Of the ninety cases treated, twenty-three are recent; of the remaining sixty-seven, forty-one have been operable, and twenty-six inoperable. A good result has been obtained in forty-five of these sixty-seven, twelve of the forty-five being inoperable. Patients have remained apparently cured up to four and one-half years after treatment.

Hospitalstidende, Copenhagen

72: 977-1002 (Oct. 10) 1929

*Chronic Arthritis, Achylia and Anemia. M. C. Lottrup.—p. 977.
*Effect of Anesthetics on Peripheral Circulation. J. Foged.—p. 983.

Chronic Arthritis, Achylia and Anemia.—Lottrup finds achylia and anemia more frequent in cases of primary progressive chronic polyarthritis than in the other forms of arthritis.

Effect of Anesthetics on Peripheral Circulation.—Foged's investigations consisted in the measurement of the temperature of the skin of the extremities during different forms of anesthesia. Ether anesthesia normally caused a rise in the temperature; the average rise in the temperature of the skin of the foot was 5 degrees C. or 9 degrees F. (Ipsen's symptom). The results in the lower extremities during lumbar anesthesia corresponded to those in ether anesthesia. In local anesthesia (not in the foot) no effect on the temperature of the sole of the foot was seen. He concludes that Ipsen's symptom usually agrees with the clinical course, being positive when the prognosis is good and negative when it is poor, with especial reference to the operation and time immediately following. In a number of cases with disagreement between the clinical course and this symptom, the postoperative course most often agreed with the indication afforded by Ipsen's symptom.

72: 1003-1028 (Oct. 17) 1929

*Cultivation in Vitro of Malignant Human Tumors. T. M. Lund.—p. 1015.

Cultivation in Vitro of Malignant Human Tumor.—Lund believes that malignant human tumors can be cultivated in vitro and that the failure heretofore to carry the cultures through a longer or unlimited period depends on purely technical conditions.

Ugeskrift for Læger, Copenhagen

91: 1041-1062 (Nov. 21) 1929

*After-Investigations on Supracondylar Fractures of Humerus in Children. S. C. Iversen.—p. 1041.
*Increased Diastasuria in Patients with Acute Appendicitis. H. Thomsen.—p. 1045.

After-Investigations on Supracondylar Fractures of Humerus in Children.—After-examination by Iversen of thirty-seven patients with this fracture treated from 1922 to 1927 showed practically complete cosmetic and functional restitution of the arm in fifteen. In twenty there were permanent changes, but hardly such as to impair the usefulness of the arm; the gun-stock deformity was seen in some of these cases. In two patients the function of the arm was noticeably impaired, partly because of deformity and limitation of movement and partly because of trophic disturbances.

Increased Diastasuria in Patients with Acute Appendicitis.—Thomsen attributes the increased diastasuria frequently seen in septic appendicitis to the presence of an acute pancreatitis. Hagedorn's dextrose tolerance test in two patients with acute appendicitis and increased diastasuria showed marked disturbance of the blood sugar regulation in one; in the other, a milder case, the disturbance was less marked. Necropsy in a case of diffuse peritonitis with diastasuria following acute appendicitis revealed a light acute pancreatitis.

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